Direct Testimony of David C. Parcell   Docket No. 2019-281-S   Palmetto Utilities, Inc.

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1   **DIRECT TESTIMONY AND EXHIBITS OF**

2   **DAVID C. PARCELL**

3   **ON BEHALF OF**

4   **THE SOUTH CAROLINA OFFICE OF REGULATORY STAFF**

5   **DOCKET NO. 2019-281-S**

6   **IN RE: APPLICATION OF PALMETTO UTILITIES, INC. FOR**

7   **ADJUSTMENT (INCREASE) OF RATES AND CHARGES, TERMS AND**

8   **CONDITIONS, FOR SEWER PROVIDED TO CUSTOMERS IN**

9   **ITS RICHLAND AND KESHAW COUNTY SERVICE AREAS**

10

11   **I.   INTRODUCTION**

12   **Q.   PLEASE STATE YOUR NAME, OCCUPATION, AND BUSINESS ADDRESS.**

13   **A.**   My name is David C. Parcell. I am a Principal and Senior Economist of Technical

14   Associates, Inc. My address is 2218 Worchester Road, Midlothian, Virginia 23113.

15   **Q.   PLEASE   SUMMARIZE   YOUR   EDUCATIONAL   BACKGROUND   AND**

16   **PROFESSIONAL EXPERIENCE.**

17   **A.**   I hold B.A. (1969) and M.A. (1970) degrees in economics from Virginia

18   Polytechnic Institute and State University (Virginia Tech) and a M.B.A. (1985) from

19   Virginia Commonwealth University. I have been a consulting economist with Technical

20   Associates since 1970.   I have provided cost of capital testimony in public utility

21   ratemaking proceedings dating back to 1972.   In this regard, I have previously filed

22   testimony and/or testified in over 575 utility proceedings before about 50 regulatory

1   agencies in the United States and Canada. Exhibit DCP-1 provides a more complete

2   description of my education and relevant work experience.

3 **Q. HAVE YOU PREVIOUSLY TESTIFIED BEFORE THE PUBLIC SERVICE**

4   **COMMISSION OF SOUTH CAROLINA ("COMMISSION")?**

5 **A.**   Yes. I have testified before the Commission a number of times, going back to 1980.

6 **Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY IN THIS PROCEEDING?**

7 **A.**   The South Carolina Office of Regulatory Staff ("ORS") retained me to evaluate the

8   current rate increase filing of Palmetto Utilities, Inc. ("PUI" or "Company"). I have

9   performed independent studies and am making recommendations of the current cost of

10   capital for PUI. In addition, since PUI is a subsidiary of Ni Pacolet Milliken Utilities, LLC

11   ("Ni" or "Parent"), I have also evaluated that entity in my analyses.

12 **Q. HAVE YOU PREPARED AN EXHIBIT IN SUPPORT OF YOUR TESTIMONY?**

13 **A.**   Yes, I have prepared one exhibit, labeled Exhibit DCP-2, which contains Schedule

14   1 through Schedule 13. The information contained in this exhibit is correct to the best of

15   my knowledge and belief.[1]

16   **II. RECOMMENDATIONS AND SUMMARY**

17 **Q. WHAT ARE YOUR RECOMMENDATIONS IN THIS PROCEEDING?**

18 **A.**   My overall cost of capital recommendations for PUI are shown on Schedule 1 and

19   are summarized as follows:

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[1] As indicated in my schedules, some of the information I used in my analyses was based on information received
from the Company in its Application and in response to discovery.

1

Item	Percent	Cost	Weighted Cost
Debt	45.0%	5.89%	2.65%
Common Equity	55.0%	9.10%-10.00%	5.01-5.50%
Total	**100.0%**		**7.66-8.15%**

Recommended cost of capital: **7.90% with 9.55% ROE**

2   PUI's application requests a cost of capital of 8.57 percent and a cost of equity of

3   10.50 percent.

4   **Q.   PLEASE SUMMARIZE YOUR ANALYSES AND CONCLUSIONS.**

5   **A.**   This proceeding is concerned with PUI's regulated wastewater utility operations in

6   South Carolina. My analyses concern the Company's cost of capital. The first step in

7   performing these analyses is to develop the appropriate capital structure. PUI proposes use

8   of a capital structure with 41.79 percent debt and 58.21 percent common equity, which

9   reflects the Test Year ending August 31, 2019 ("Test Year") capital structure ratios of PUI.[2]

10   I do not use this capital structure since the recent capital structures of PUI have been

11   constantly changing, as well as the fact that a significant portion of PUI's debt is

12   represented by advances from affiliates. As a result, the Company's actual capital structure

13   cannot be accurately described as a "market-driven" capital structure. Instead, I propose

14   use of a hypothetical capital structure with 45 percent debt and 55 percent equity, which

15   reflects the capital structure ratios of the proxy groups of the water/wastewater utilities I

16   considered in reaching my cost of equity conclusion (*i.e.*, true "market-driven" capital

17   structures).

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[2] Direct Testimony of Harold Walker, III, Exhibit HW-2, Schedule 1.

1   The second step in a cost of capital calculation is to determine the embedded cost

2   rate of debt. PUI proposes to use a cost rate of 5.89 percent for debt, the Company's cost

3   rate as of August 31, 2019. I use this cost rate in my analyses.

4   The third step in the cost of capital calculation is to estimate the cost of equity. I

5   employ three recognized methodologies to estimate PUI's cost of equity, each of which I

6   apply to two proxy groups of water/wastewater utilities. These three methodologies and

7   my findings are:

Methodology	Range
Discounted Cash Flow ("DCF")	8.1-9.1%
Capital Asset Pricing Model ("CAPM")	6.0-6.3%
Comparable Earnings ("CE")	9.0-10.0%

8   Based upon these findings, I conclude that PUI's cost of equity is within a range of

9   9.1 percent to 10.0 percent (9.55 percent mid-point), which is based upon the upper-end of

10   both my DCF and CE model results.[3]

11   Combining these three steps into the weighted cost of capital results in an overall

12   cost of capital of 7.66 percent to 8.15 percent (which incorporates a 9.1 percent to 10.0

13   percent cost of equity). My specific cost of capital recommendation is the mid-point of

14   this range, or 7.90 percent (9.55 percent cost of equity).

15   **III. ECONOMIC/REGULATORY PRINCIPLES AND METHODOLOGIES**

16   **Q.   WHAT ARE THE PRIMARY ECONOMIC AND REGULATORY PRINCIPLES**

17   **THAT ESTABLISH THE STANDARDS FOR DETERMINING A FAIR RATE OF**

18   **RETURN FOR A REGULATED UTILITY?**

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[3]As I indicate in a later section, my cost of equity recommendation does not directly incorporate the CAPM results, which I believe to be somewhat low at this time, relative to the DCF and CE results.

1 **A.** Public utility rates are normally established in a manner designed to allow the

2 recovery of costs, including capital costs. This is frequently referred to as "cost of service"

3 ratemaking. Rates for regulated public utilities traditionally have been primarily

4 established using the "rate base – rate of return" concept. Under this method, utilities are

5 allowed to recover a level of operating expenses, taxes, and depreciation deemed

6 reasonable for rate-setting purposes, and are granted an opportunity to earn a fair rate of

7 return on the assets utilized (*i.e.*, rate base) in providing service to their customers.

8 The rate base is derived from the asset side of the utility's balance sheet as a dollar

9 amount and the rate of return is developed from the liabilities/owners' equity side of the

10 balance sheet as a percentage. Thus, the revenue impact of the cost of capital is derived by

11 multiplying the rate base by the rate of return, including income and other taxes.

12 The rate of return is developed from the cost of capital which is estimated by

13 weighting the capital structure components (*i.e.*, debt, and common equity) by the

14 percentages in the capital structure and multiplying these values by their cost rates. This

15 is also known as the weighted cost of capital.

16 Technically, "fair rate of return" is a regulatory and accounting concept that refers

17 to an *ex post facto* (after the fact) earned return on an asset base while the cost of capital is

18 an economic and financial concept which refers to *ex ante facto* (before the fact) expected,

19 or required, return on a capital base. In regulatory proceedings, however, the two terms

20 are often used interchangeably, and I have equated the two concepts in my testimony.

21 From an economic standpoint, a fair rate of return is normally interpreted to mean

22 that an efficient and economically managed utility will be able to maintain its financial

23 integrity, attract capital, and establish comparable returns for similar risk investments.

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1   These concepts are derived from economic and financial theory and are generally

2   implemented using financial models and economic concepts.

3   With regard to the regulatory standards, my testimony is based on my

4   understanding that two United States Supreme Court decisions provide the controlling

5   standards for a fair rate of return. The first decision is *Bluefield Water Works and*

6   *Improvement Co. v. Public Serv. Comm'n of West Virginia*, 262 U.S. 679 (1923). In this

7   decision, the Court stated:

8   The annual rate that will constitute just compensation depends upon many
9   circumstances and must be determined by the exercise of fair and
10   enlightened judgment, having regard to all relevant facts. A public utility
11   is entitled to such rates as will permit it to earn a return on the value of the
12   property which it employs for the convenience of the public equal to that
13   generally being made at the same time and in the same general part of the
14   country on investments in other business undertakings which are attended
15   by corresponding risks and uncertainties; but it has no constitutional right
16   to profits such as are realized or anticipated in highly profitable enterprises
17   or speculative ventures. The return should be reasonably sufficient to assure
18   confidence in the financial soundness of the utility, and should be adequate,
19   under efficient and economical management, to maintain and support its
20   credit and enable it to raise the money necessary for the proper discharge of
21   its public duties. A rate of return may be reasonable at one time, and
22   become too high or too low by changes affecting opportunities for
23   investment, the money market, and business conditions generally.

24   It is generally understood that the *Bluefield* decision established the following

25   standards for a fair rate of return: comparable earnings, financial integrity, and capital

26   attraction. It also noted that required returns change over time, and there is an underlying

27   assumption that the utility be operated efficiently.

28   The second decision is *Federal Power Comm'n v. Hope Natural Gas Co.*, 320 U.S.

29   591 (1942). In that decision, the Court stated:

30   The rate-making process under the [Natural Gas] Act, *i.e.*, the fixing of 'just
31   and reasonable' rates, involves a balancing of the investor and consumer
32   interests. . . . From the investor or company point of view it is important
33   that there be enough revenue not only for operating expenses but also for

the capital costs of the business. These include service on the debt and dividends on the stock. By this standard the return to the equity owner should be commensurate with returns on investments in other enterprises having corresponding risks. That return, moreover, should be sufficient to assure confidence in the financial integrity of the enterprise, so as to maintain its credit and to attract capital.

The Commission has looked to the *Hope* and *Bluefield* standards as guidance for setting rates. For example, in both Docket No. 2013-59-E, a Duke Energy Carolinas, LLC rate case from 2013, and in Docket No. 2016-227-E, a Duke Energy Progress, LLC rate case from 2016, the Commission stated:

> In setting rates, the Commission must determine a fair rate of return that the utility should be allowed the opportunity to earn after recovery of the expenses of utility operations. The legal standards applicable to this determination are set forth in Fed. Power Comm'n v. Hope Natural Gas Co., 320 U.S. 591, 602-603 (1944) and Bluefield Water Works and Improvement Co. v. Pub. Serv. Comm'n of W. VA., 262 U.S. 679, 692-93 (1923). These standards were adopted by the South Carolina Supreme Court in Southern Bell Tel. & Tel. Co. v. S.C. Pub. Serv. Comm'n, 270 S.C. 590, 595-96, 244 S.E.2d 278, 281 (1978). The Court stated:

> What annual rate will constitute just compensation depends upon many circumstances, and must be determined by the exercise of a fair and enlightened judgment, having regard to all relevant facts. A public utility is entitled to such rates as will permit it to earn a return on the value of the property which it employs for the convenience of the public equal to that generally being made at the same time and in the same general part of the country on investments in other business undertakings which are attended by corresponding risks and uncertainties; but it has no constitutional right to profits such as are realized or anticipated in highly profitable enterprises or speculative ventures. The return should be reasonably sufficient to assure confidence in the financial soundness of the utility and should be adequate, under efficient and economical management, to maintain and support its credit and enable it to raise the money necessary for the proper discharge of its public duties…

> Southern Bell Tel., 270 S.C. at 595-96, 244 S.E.2d at 281 (quoting Bluefield, 262 U.S. at 692-93). These cases also establish that the process of determining rates of return requires the exercise of informed judgment by the Commission. The South Carolina Supreme Court has held that:

> [T]he Commission was not bound to the use of any single formula or combination of formulae in determining rates. Its ratemaking function,

1   moreover, involves the making of 'pragmatic adjustments' . . .. Under the
2   statutory standard of 'just and reasonable' it is the result reached not the
3   method employed which is controlling. . .. The ratemaking process under
4   the Act, *i.e.*, the fixing of 'just and reasonable' rates, involves the balancing
5   of the investor and the consumer interests. Thus we stated in the <u>Natural</u>
6   <u>Gas Pipeline Co.</u> case that 'regulation does not insure that the business shall
7   produce net revenues.' . . . [B]ut such considerations aside, the investor
8   interest has a legitimate concern with the financial integrity of the company
9   whose rates are being regulated. From the investor or company point of
10   view it is important that there be enough revenue not only for operating
11   expenses but also for the capital costs of the business. These include service
12   on debt and dividends on the stock. . . . By that standard the return to the
13   equity owner should be commensurate with returns on investments in other
14   enterprises having corresponding risks. That return, moreover, should be
15   sufficient to assure confidence in the financial integrity of the enterprise, so
16   as to maintain its credit and to attract capital.

17   <u>Southern Bell Tel.</u>, 270 S.C. at 596-97, 244 S.E. 2d at 281 (quoting <u>Hope</u>
18   <u>Natural Gas Co.</u>, 320 U.S. at 602-03). These principles have been employed
19   by the Commission and the South Carolina Courts consistently.

20   *S.C. Pub. Serv. Comm'n Docket No. 2016-227-E, Order No. 2016-871*
21   *(Dec. 21, 2016), p. 19-21; S.C. Pub. Serv. Comm'n Docket No. 2013-59-E,*
22   *Order No. 2013-661 (Sept. 18, 2013), p. 19-20.*

23   The three economic and financial parameters in the *Bluefield* and *Hope* decisions –

24 comparable earnings, financial integrity, and capital attraction – reflect the economic

25 criteria encompassed in the "opportunity cost" principle of economics. The opportunity-

26 cost principle provides that a utility and its investors should be afforded an opportunity

27 (not a guarantee) to earn a return commensurate with returns they could expect to achieve

28 on investments of similar risk. The opportunity-cost principle is consistent with the

29 fundamental premise on which regulation rests, namely, that it is intended to act as a

30 surrogate for competition.

31 **Q.**   **HOW CAN THE *BLUEFIELD* AND *HOPE* PARAMETERS BE EMPLOYED TO**

32   **ESTIMATE THE COST OF CAPITAL FOR A UTILITY?**

1   **A.**   Neither the courts nor economic/financial theory has developed exact and

2   mechanical procedures for precisely determining the cost of capital. This is the case

3   because the cost of capital is an opportunity cost and is prospective looking, which dictates

4   that it must be estimated. However, there are several useful models that can be employed

5   to assist in estimating the cost of common equity ("return on equity" or "ROE"), which is

6   the capital cost component that is the most difficult to estimate. These include the DCF,

7   CAPM, CE, and risk premium ("RP") methods. I have not directly employed a RP model

8   in my analyses although, as discussed later, my CAPM analysis is a form of the RP

9   methodology. I describe each of these methodologies in more detail later in my testimony.

10   **IV. GENERAL ECONOMIC CONDITIONS**

11 **Q.   ARE   ECONOMIC   AND   FINANCIAL   CONDITIONS   IMPORTANT   IN**

12 **DETERMINING THE COSTS OF CAPITAL FOR A PUBLIC UTILITY?**

13 **A.**   Yes. The costs of capital for both fixed-cost (debt and preferred stock) components

14 and common equity are determined in part by current and prospective economic and

15 financial conditions. At any given time, each of the following factors has an influence on

16 the costs of capital:

17 - The level of economic activity (*i.e.*, growth rate of the economy);
18 - The stage of the business cycle (*i.e.*, recession, expansion, or transition);
19 - The level of inflation;
20 - The level and trend of interest rates; and,
21 - Current and expected economic conditions.

22 My understanding is that this position is consistent with the *Bluefield* decision, which noted

23 "[a] rate of return may be reasonable at one time and become too high or too low by changes

1   affecting opportunities for investment, the money market, and business conditions

2   generally."[4]

3 **Q.**   **WHAT INDICATORS OF ECONOMIC AND FINANCIAL ACTIVITY DID YOU**

4   **EVALUATE IN YOUR ANALYSES?**

5 **A.**   I examined several sets of economic statistics from 1975 to the present. I chose

6   this time period because it permits the evaluation of economic conditions over four full

7   business cycles, plus the current cycle, allowing for an assessment of changes in long-term

8   trends. Consideration of economic/financial conditions over a relatively long period of

9   time allows me to assess how such conditions have impacted the level and trends of the

10   costs of capital. This period also approximates the beginning and continuation of active

11   rate case activities by public utilities that generally began in the mid-1970s.

12   A business cycle is commonly defined as a complete period of expansion (recovery

13   and growth) and contraction (recession). A full business cycle is a useful and convenient

14   period over which to measure levels and trends in long-term capital costs because it

15   incorporates the cyclical (*i.e.*, stage of business cycle) influences and, thus, permits a

16   comparison of structural (or long-term) trends.

17 **Q.**   **PLEASE DESCRIBE THE TIME FRAMES OF THE FOUR PRIOR BUSINESS**

18   **CYCLES AND THE CURRENT CYCLE.**

19 **A.**   The four prior complete cycles and current cycle cover the following periods:

Business Cycle	Expansion Cycle	Contraction Period
1975-1982	Mar. 1975-July 1981	Aug. 1981-Oct. 1982
1982-1991	Nov. 1982-July 1990	Aug. 1990-Mar. 1991
1991-2001	Mar. 1991-Mar. 2001	Apr. 2001-Nov. 2001
2001-2009	Nov. 2001-Nov. 2007	Dec. 2007-June 2009

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[4] *Bluefield*, 262 U.S. at 693.

1
Current	July 2009 -

Source: The National Bureau of Economic Research, "U.S. Business Cycle Expansions and Contractions."[5]

2 **Q.**   **DO YOU HAVE ANY GENERAL OBSERVATIONS CONCERNING THE**

3   **RECENT TRENDS IN ECONOMIC CONDITIONS AND THEIR IMPACT ON**

4   **CAPITAL COSTS OVER THIS BROAD PERIOD?**

5 **A.**   Yes, I do. From the early 1980s until the end of 2007, the United States economy

6   enjoyed general prosperity and stability. This period was characterized by longer economic

7   expansions, relatively tame contractions, low and declining inflation, and declining interest

8   rates and other capital costs.

9   However, in 2008 and 2009 the economy declined significantly, initially as a result

10   of the 2007 collapse of the "sub-prime" mortgage market and the related liquidity crisis in

11   the financial sector of the economy. Subsequently, this financial crisis intensified with a

12   more broad-based decline, initially based on a substantial increase in petroleum prices and

13   a dramatic decline in the U.S. financial sector of the economy.

14   This decline has been described as the worst financial crisis since the Great

15   Depression of the 1930s and has been referred to as the "Great Recession." Beginning in

16   2008, the U.S. and other governments implemented unprecedented policies to attempt to

17   correct or minimize the scope and effects of this recession. Some of these policies are still

18   in effect.

19   Currently the U.S. and international economies are facing the prospect of a new

20   recession. This is largely the result of the Coronavirus Disease 2019 ("COVID-19" or

21   "novel coronavirus") pandemic and the possibility that the economic and financial

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[5] http://www.nber.org/cycles/cyclesmain.html.

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1   consequences of this serious health crisis will create a recession as nations, including the

2   U.S., institute significant travel, social, and commercial restrictions designed to slow the

3   spread of COVID-19.

4   **Q.   PLEASE DESCRIBE RECENT AND CURRENT ECONOMIC AND FINANCIAL**

5   **CONDITIONS AND THEIR IMPACT ON THE COSTS OF CAPITAL.**

6   **A.**   One impact of the Great Recession has been a reduction in actual and expected

7   investment returns and a corresponding reduction in capital costs. This decline is

8   evidenced by a decline in both short-term and long-term interest rates and the expectations

9   of investors and is reflected in cost of capital model results (such as DCF, CAPM, and CE).

10   Regulatory agencies throughout the U.S. have recognized the decline in capital costs by

11   authorizing lower ROEs for regulated utilities in each of the last several years.[6]

12   Schedule 2 of Exhibit DCP-2 shows several sets of relevant economic and financial

13   statistics for the cited time periods. Page 1 contains general macroeconomic statistics, page

14   2 shows interest rates, and page 3 contains equity market statistics.

15   Page 1 shows that in 2007 the economy stalled and subsequently entered a

16   significant decline, as indicated by the lower growth rate in real (*i.e.*, adjusted for inflation)

17   Gross Domestic Product ("GDP"), lower levels of industrial production, and an increase in

18   the unemployment rate. This recession lasted until mid-2009, making it a longer-than-

19   normal, as well as a much deeper, recession. Since then, economic growth has been

20   somewhat erratic, and the economy has grown more slowly than in prior expansions. On

21   the other hand, the current expansion has now reached the longest period of any expansion

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[6] Regulatory Research Associates, "Regulatory Focus." April 11, 2019.

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1   in recent financial history. As stated above, there are fears that, due to the COVID-19

2   pandemic, the recent expansion may end, and a recession will result.

3   Page 1 also shows the rate of inflation. As reflected in the Consumer Price Index

4   ("CPI"), inflation rose significantly during the 1975-1982 business cycle and reached

5   double-digit levels in 1979-1980. The rate of inflation has declined substantially since

6   1981. Since 2008, the CPI has been 3 percent or lower on an annual basis, with 2014 and

7   2015 growth below 1 percent, 2016 and 2017 growth at 2.1 percent, 2018 growth at 1.9

8   percent, and 2019 growth at 2.3 percent. It is thus apparent that the rate of inflation has

9   generally been declining over the past several business cycles. Recent and current levels

10   of inflation are at the lowest levels of the past 35 years, which is reflective of lower capital

11   costs.[7]

12 **Q.**   **WHAT HAVE BEEN THE TRENDS IN INTEREST RATES OVER THE FOUR**

13   **PRIOR BUSINESS CYCLES AND AT THE CURRENT TIME?**

14 **A.**   Page 2 shows several series of interest rates. Both short-term and long-term rates

15   rose sharply to record levels in 1975-1982 when the inflation rate was high. Interest rates

16   have declined substantially in conjunction with the corresponding declines in inflation

17   since the early 1980s.

18   From 2008 to late 2015, the Federal Reserve System ("Federal Reserve")

19   maintained the Federal Funds rate (*i.e.*, short-term interest rate) at 0.25 percent, an all-time

20   low. Following much anticipation, the Federal Reserve subsequently raised the Federal

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[7] The rate of inflation is one component of interest rate expectations of investors, who generally expect to receive a return in excess of the rate of inflation. Thus, a lower rate of inflation has a downward impact on interest rates and other capital costs.

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1   Funds rate on nine occasions between December 2015 and December 2018.[8] In July,

2   September, and October 2019, the Federal Reserve began reducing the Federal Funds rate

3   by 0.25 percent on three separate occasions. An emergency rate cut of 0.50 percent

4   occurred in early March 2020, followed by further reduction in mid-March to a range of

5   zero percent to 0.25 percent as an economic stimulus in response to the COVID-19

6   situation. The Federal Reserve also purchased U.S. Treasury securities to stimulate the

7   economy.[9]

8   As seen on page 2, since 2011 both U.S. and public utility bond yields have declined

9   to their lowest levels in the past four business cycles and in more than 35 years. Even with

10   the "tapering" and eventual ending of the Federal Reserve's Quantitative Easing program,

11   as well as the Federal Reserve's raising of the Federal Funds rate (prior to again lowering

12   this rate), interest rates have remained relatively low. The rates on U.S. Treasury and

13   public utility securities increased somewhat in the first several months of 2019, before

14   falling over the past several months. Both government and utility long-term lending rates

15   remain near historically low levels, again reflective of lower capital costs. In addition,

16   current interest rates for many utilities are lower than historic (embedded) cost rates.

17   **Q.**   **WHAT DOES SCHEDULE 2 SHOW FOR TRENDS OF COMMON SHARE**

18   **PRICES?**

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[8] The Federal Funds increases took place in December 2015, December 2016, March 2017, June 2017, December 2017, March 2018, June 2018, September 2018, and December 2018. Subsequent reduction took place in July 2019, September 2019, October 2019, and March 2020.

[9] This is referred to as Quantitative Easing, which was comprised of three "rounds" during the Great Recession. In "round" 3, known as QE3, the Federal Reserve initially purchased some $85 billion of U.S. Treasury Securities per month in order to stimulate the economy. The Federal Reserve eventually "tapered" its purchase of U.S. Treasury securities through October 2014, at which time Quantitative Easing ended. The Federal Reserve restarted this program in mid-March 2020 in response to economic conditions resulting from the COVID-19 outbreak.

1   A.   Page 3 of Schedule 2 shows several series of common stock prices and ratios. These

2   indicate that stock prices were essentially stagnant during the high inflation/high interest

3   rate environment of the late 1970s and early 1980s. The 1983-1991 business cycle and the

4   more recent cycles witnessed a significant upward trend in stock prices. The beginning of

5   the recent financial crisis saw stock prices decline precipitously as stock prices in 2008 and

6   early 2009 were down significantly from peak 2007 levels, reflecting the

7   financial/economic crisis. Beginning in the second quarter of 2009, prices recovered

8   substantially and ultimately reached and exceeded the levels achieved prior to the "crash."

9   On the other hand, recent equity markets have been somewhat volatile. As an

10   example of this, the end of 2018 witnessed significant declines in stock prices, with many

11   indexes declining more than 20 percent (*i.e.*, a "bear" market). Following this, stock

12   indices recovered with many indices reaching record high levels in 2019 and early 2020.

13   Since the latter days of February 2020, on the other hand, stock prices have been extremely

14   volatile and have dramatically declined in response to the COVID-19 pandemic and

15   corresponding uncertainty in the financial markets regarding the economic consequences

16   of governmental, commercial and social measures designed to limit the spread of the virus.

17   Q.   **WHAT CONCLUSIONS DO YOU DRAW FROM YOUR DISCUSSION OF**

18   **ECONOMIC AND FINANCIAL CONDITIONS?**

19   A.   Recent economic and financial circumstances have differed from any that have

20   prevailed since at least the 1930s. Concurrent with the Great Recession, there was a decline

21   in capital costs and returns which significantly reduced the values of most retirement

22   accounts, investment portfolios, and other assets. One significant aspect of this has been a

1   decline in investor expectations of returns[10] even with the return of stock prices to levels

2   achieved prior to the "crash."[11] This is evidenced by: (1) lower interest rates on bank

3   deposits; (2) lower interest rates on U.S. Treasury and utility bonds; and (3) lower

4   authorized returns on equity by regulatory commissions. Finally, as noted above, utility

5   bond interest rates are currently at levels well below those prevailing prior to the financial

6   crisis of late 2008 to early 2009, remain near the lowest levels in the past 35 years and are

7   also generally lower than the embedded cost rates for most utilities, including PUI.

8   Finally, current economic conditions, resulting from "shut-downs" of many large and small

9   businesses in response to the COVID-19 pandemic, are resulting in lower profit levels,

10   equity returns, and interest rates.

11 **Q.** **HOW DO THESE ECONOMIC/FINANCIAL CONDITIONS IMPACT THE**

12   **DETERMINATION OF A RETURN ON EQUITY FOR REGULATED**

13   **UTILITIES?**

14 **A.**   The costs of capital for regulated utilities have declined in recent years. In addition,

15   the results of the traditional ROE models (*i.e.*, DCF, CAPM, CE, and RP) are lower than

16   was the case prior to the Great Recession. In light of this, it is not surprising that the

17   average ROEs authorized by state regulatory agencies have declined and continued to

18   remain relatively low through 2018, as follows:[12]

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[10] *See*, *e.g.*, Kiplinger's Personal Finance, "Investors Brace for Smaller Gains, Focus on Long-Term," August 30, 2015.

[11] *See e.g.*, Vanguard News & Perspectives. "Stabilization, Not Stagnation: Expect Modest Returns," March 30, 2017, www.personal.vanguard.com/us/insights/artical/infographic-stabilization-032017.

[12] Regulatory Research Associates, "Regulatory Focus", January 31, 2019, General Rate Cases.

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Year	Electric		Natural Gas	
	Average	Median	Average	Median
2007	10.32%	10.23%	10.22%	10.20%
2008	10.37%	10.30%	10.39%	10.45%
2009	10.52%	10.50%	10.22%	10.26%
2010	10.29%	10.26%	10.15%	10.10%
2011	10.19%	10.14%	9.91%	10.05%
2012	10.02%	10.00%	9.93%	10.00%
2013	9.82%	9.82%	9.68%	9.72%
2014	9.76%	9.75%	9.78%	9.78%
2015	9.60%	9.53%	9.60%	9.68%
2016	9.60%	9.60%	9.53%	9.50%
2017	9.68%	9.60%	9.73%	9.60%
2018	9.56%	9.57%	9.60%	9.60%

2 **Q. YOU HAVE PREVIOUSLY CITED THE CURRENT COVID-19 PANDEMIC AND**

3 **THE ECONOMIC AND FINANCIAL CONSEQUENCES OF THE EFFORTS TO**

4 **STEM THIS HEALTH CRISIS. HOW SHOULD THESE FACTORS BE**

5 **CONSIDERED IN DETERMINING THE COST OF CAPITAL FOR PUI IN THIS**

6 **PROCEEDING?**

7 **A.** It is my view, as a regulatory economist and cost of capital witness, that the impacts

8 of the current COVID-19 pandemic should not be incorporated into the cost of capital for

9 PUI or other utilities. It is apparent that the impact of this crisis affects virtually all aspects

10 of society, including utilities and ratepayers. It would be improper, for example, to favor

11 a utility, either by insulating it from the consequences endured by ratepayers and other

12 businesses or by providing a higher return level to utilities, as a response to the COVID-19

13 pandemic.

14 I note that my analyses, which follow, do not give any favoritism resulting from the

15 financial market impacts of the COVID-19 pandemic, either positively or negatively, to

1   the cost of capital proposed for PUI. As will be described, my DCF analyses, for example,

2   do not consider the stock prices during the stock market's significant and unprecedented

3   declines in late February. Use of these prices, without a corresponding reduction in

4   anticipated growth rates, would likely result in an unwarranted increase in ROE cost rates,

5   such as would be indicated in DCF analyses. I likewise have not focused on the Federal

6   Reserve's unprecedented recent actions of reducing short-term interest rates to near-zero

7   levels. This would have the effect of decreasing indicated costs of capital.

V. PALMETTO UTILITIES, INC. OPERATIONS AND CAPITAL

STRUCTURE/COST OF DEBT

10   **Q.   PLEASE DESCRIBE PUI AND ITS OPERATIONS.**

11   **A.**   PUI is a regulated wastewater utility that operates in Kershaw and Richland

12   Counties of South Carolina. Since its last rate proceeding, PUI has merged the former

13   Palmetto of Richland County System ("PRC System"), which was acquired from the City

14   of Columbia in 2013.[13]

15   **Q.   WHAT IS THE OWNERSHIP STRUCTURE OF PUI?**

16   **A.**   PUI is a direct subsidiary of Ni South Carolina Utilities, Inc. ("Ni SC Utilities")

17   which in turn is a subsidiary of Ni Pacolet Milliken Utilities, LLC ("Ni"), which is a

18   subsidiary of Pacolet Milliken, LLC. ("Pacolet)," a privately-owned holding company. Ni

19   also has other South Carolina operations: Ni South Carolina, LLC, which owns Palmetto

20   Wastewater Reclamation, LLC, and 1710 Woodstock Farms Road, LLC, a subsidiary of

21   Ni SC Utilities. In addition, Ni has utility subsidiaries in Florida and Texas.[14] Pacolet

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[13] Ni Pacolet Milliken Utilities, "Allowable Ex Parte Briefing," Tuesday September 17, 2019.

[14] Response to ORS First Request for Production of Books Records and Other Information, Question 1-35.

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1   Milliken Enterprises also owns Lockhart Power Co., which is a regulated electric utility

2   that operates in South Carolina.

3   **Q.**   **DOES PUI HAVE DEBT RATINGS?**

4   **A.**   No, it does not.[15] PUI's debt is in the form of Bank of America loans and "advances

5   from affiliates," specifically Ni.

6   **Q.**   **HAVE YOU EVALUATED THE CAPITAL STRUCTURE OF PUI?**

7   **A.**   Yes. I have examined the recent historic (2014-2019) capital structure ratios of

8   PUI. These are shown on Page 1 of Schedule 3 of Exhibit DCP-2. I have summarized

9   below the common equity ratios for PUI:

Year	Incl. S-T Debt	Excl. S-T Debt
2014	42.2%	44.2%
2015	62.4%	63.7%
2016	58.9%	60.3%
2017	48.6%	49.5%
2018	49.5%	50.5%
Aug. 31, 2019	57.8%	58.9%

10   Two aspects of PUI's capital structure ratios are apparent. First, the respective

11   equity ratios (excluding short-term debt) are variable from year-to-year and have ranged

12   from 44 percent to nearly 64 percent. Second, a substantial portion of PUI's capital is in

13   the form of short-term debt, with advances from affiliates representing much of the debt.

14   Page 2 of Schedule 3 shows the 2015-2019 capital structure ratios of Ni SC

15   Utilities. The annual equity ratios of this entity are:

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[15] Response to ORS First Request for Production of Books Records and Other Information, Question 1-22.

1

Year	Incl. S-T Debt	Excl. S-T Debt
2015	64.5%	65.7%
2016	61.3%	71.8%
2017	52.2%	74.7%
2018	49.4%	75.2%
2019	58.7%	81.6%

2   It is apparent that Ni SC Utilities' equity ratios are also variable from year-to-year. In

3   addition, this entity relies somewhat heavily on short-term debt in its capitalization.

4   Page 3 of Schedule 3 shows the capital structures of Ni over past five years.[16] This

5   indicates the following equity ratios:

Year	Incl. S-T Debt	Excl. S-T Debt
2015	63.8%	65.0%
2016	73.3%	74.6%
2017	79.5%	81.1%
2018	81.8%	83.4%
2019	84.8%	86.4%

6   **Q.   HAVE YOU ALSO CONDUCTED ANALYSES OF THE HISTORIC AND**

7   **PROJECTED COMMON EQUITY RATIOS OF THE PROXY GROUPS USED TO**

8   **ESTIMATE PUI'S COST OF EQUITY?**

9   **A.**   Yes, I have. Schedule 4 of Exhibit DCP-2 shows the five-year historic (2014-2018)

10   and estimated 2022-2024 common equity ratios (excluding short-term debt) for the proxy

11   groups water/wastewater utilities identified in a later section of my testimony. The

12   summary results are as follows:

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[16] Response to ORS Economics Request #2.

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Group	Five-Year Historic		2022-24 Estimated	
	Average	Median	Average	Median
Value Line Group	54.9%	56.2%	56.6%	60.5%
Parcell Group	55.9%	56.5%	56.4%	60.5%

2   These results indicate average and median common equity ratios between 55

3   percent and 56 percent, with one exception (the median 2022-2024 estimated equity ratios).

4   **Q.   WHAT CAPITAL STRUCTURE HAS PUI REQUESTED IN THIS**

5   **PROCEEDING?**

6   **A.**   PUI is proposing the use of its actual Test Year capital structure ratios, which are

7   41.79 percent debt and 58.21 percent equity.

8   **Q.   DOES THIS PROPOSED CAPITAL STRUCTURE REPRESENT AN**

9   **APPROPRIATE CAPITAL STRUCTURE FOR PUI AT THIS TIME?**

10 **A.**   No, it does not. As I indicated above, PUI has historically employed a highly

11 volatile capital structure. Its proposed capital structure contains more equity than most

12 water utilities as shown on Schedule 4 of Exhibit DCP-2. In addition, as noted above, PUI

13 has a substantial portion of its capital provided from "advances from affiliates". As a result,

14 the actual capital structures of PUI cannot be described as a "market-driven" capital

15 structure, as are the groups of proxy water/wastewater utilities used in my testimony to

16 estimate PUI's cost of equity.

17 **Q.   WHAT CAPITAL STRUCTURE DO YOU USE IN YOUR COST OF CAPITAL**

18 **ANALYSES?**

19 **A.**   I propose that the Commission utilize a capital structure with 55 percent equity and

20 45 percent debt. This reflects the average capital structure ratios of the proxy groups of

21 water utilities (*i.e.*, a "market-driven" capital structure).

1 **Q.** **ARE THERE ANY OTHER FACTORS THAT SHOULD BE CONSIDERED IN**

2   **DETERMINING PUI'S PROPER RATE-MAKING CAPITAL STRUCTURE?**

3 **A.** Yes. ORS witness Hunnell's Direct Testimony identifies a significant (*i.e.*, $95.6

4   million) level of Plant Acquisition Adjustment (labeled as Account 114). As noted in Mr.

5   Hunnell's testimony, PUI's Account 114 current balances are related to its past acquisition

6   of other utility plant, including from the City of Columbia. Mr. Hunnell states that this

7   Commission has historically disallowed recovery of Account 114 balances and he is

8   recommending in his testimony that this practice be continued.

9 **Q.** **ARE THERE ANY RELATED COST OF CAPITAL IMPLICATIONS OF THE**

10   **REGULATORY TREATMENT OF PLANT ACQUISITION ADJUSTMENTS,**

11   **SUCH AS THOSE ADDRESSED BY MR. HUNNELL?**

12 **A.** Yes, there are. Another aspect of plant acquisition adjustments is how these

13   adjustments are financed, in terms of the capital structure and the costs of debt and equity

14   that were employed to finance the acquisition(s). If there is to be no recovery of plant

15   acquisition balances, it follows that there should be no related recovery of the capital costs

16   for the financing of these acquisitions.

17 **Q.** **CAN THE SPECIFIC CAPITAL STRUCTURE AND COSTS OF DEBT AND**

18   **EQUITY USED TO FINANCE ACQUISITIONS ALWAYS BE DETERMINED?**

19 **A.** No. Acquisitions are often financed not with specific debt and equity sources, but

20   rather from the general funds of the acquiring company. In addition, when the acquired

21   company is purchased in part from an equity swap, this can complicate the attempt to

22   "trace" the funds used to finance the acquisition.

1 **Q.** **CAN YOU IDENTIFY ANY METHODS THAT CAN BE USED TO RECOGNIZE**

2 **THE FINANCING IMPLICATIONS OF PUI'S PLANT ACQUISITION**

3 **ADJUSTMENTS LEVELS?**

4 **A.** Yes, I can. The relatively large amount of PUI's plant acquisition adjustment(s),

5 in conjunction with the previously-mentioned above-average common equity ratio of the

6 Company as well as the existence of intra-company debt, represents another reason to

7 employ the hypothetical capital structure that I am proposing in this proceeding. I also

8 believe that use of this hypothetical capital structure should be maintained for the

9 foreseeable future, in part, to partially account for the Company's plant acquisition

10 adjustment(s) and the Commission's historic practice of disallowing recovery of these

11 costs, as noted by Mr. Hunnell.

12 **Q.** **WHAT IS THE COST OF DEBT OF PUI?**

13 **A.** The Company's testimony utilizes a cost of long-term debt of 5.89 percent – the

14 cost as of August 31, 2019.

15 **Q.** **WHAT COST OF DEBT DO YOU UTILIZE IN YOUR COST OF CAPITAL**

16 **ANALYSES?**

17 **A.** I employ a debt cost rate of 5.89 percent, the same cost rate utilized by PUI.

18 **VI. SELECTION OF PROXY GROUPS**

19 **Q.** **HOW HAVE YOU ESTIMATED THE COST OF EQUITY FOR PUI?**

20 **A.** PUI is a subsidiary of Ni and is not publicly traded. Consequently, it is not possible

21 to directly apply cost of equity models to this entity. Generally, groups of comparison or

22 "proxy" companies are analyzed as a substitute for PUI to determine its cost of common

23 equity.

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1   I have examined two such groups for comparison of PUI. I selected one group of

2   water/wastewater utilities covered by Value Line (Standard Edition) and using the criteria

3   listed on Schedule 5 of Exhibit DCP-2. These criteria are as follows:

4   1)   Primarily a regulated water utility in the United States;

5   2)   Common equity ratio 40 percent or greater;

6   3)   Value Line Safety of 2 or 3;

7   4)   S&P's bond ratings of A or AA;

8   5)   Currently pays dividends, and has not reduced dividends in past five

9   years; and,

10   6)   Not currently involved in major merger.

11   Second, I have conducted studies of the cost of equity for the water/wastewater

12 utilities group cited by Value Line. I note that the Value Line group contains one company

13 (*i.e.*, SJW Corp.) that has been recently involved in a major merger activity with another

14 water utility (*i.e.*, Connecticut Water). In addition, Aqua America is currently in the

15 process of acquiring several natural gas utilities, which is significantly changing its

16 operational and risk profile. This group is very similar to the group of water utilities

17 employed by PUI witness Harold Walker, III[17] in his analyses.   I note that two of the

18 companies he considers, Aqua America and SJW Group, are currently and/or were recently

19 involved in major mergers and thus do not appear to satisfy one of the criteria Mr. Walker

20 notes he considers as a proxy group screening criterion – "are not the announced subject

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[17] PUI has multiple witnesses with a last name of Walker. All references in this testimony to "Mr. Walker" refer to Harold Walker, III.

1   of an acquisition."[18] This group also differs from Mr. Walker's group due to his exclusion

2   of Artesian Resources, which appears to satisfy his selection criteria.

3   **VII.   DISCOUNTED CASH FLOW ANALYSIS**

4   **Q.   WHAT IS THE THEORY AND METHODOLOGICAL BASIS OF THE DCF**

5   **MODEL?**

6   **A.**   The DCF model is one of the oldest and most commonly used models for estimating

7   the ROE for public utilities. The DCF model is based on the "dividend discount model"

8   of financial theory, which maintains that the value (price) of any security or commodity is

9   the discounted present value of all future cash flows.

10   The DCF model is based upon two fundamental principles. First, DCF is based on

11   the postulate that investors value an asset based on the future cash flows (*i.e.*, dividends

12   and ultimate sales in the case of common stocks) they expect to receive from owning the

13   asset. The second DCF principle is that investors value a dollar received in the future less

14   than a dollar received today (*i.e.*, the "time value of money"). Within this context, the

15   current price of a company's stock is equal to the present value equivalent of the expected

16   dividends and the proceeds from eventually selling the stock. The discount rate that

17   equates the future anticipated dividends and future anticipated selling price with the current

18   market price is the cost of common equity.

19   The DCF model is based upon the concept that the value of a share of stock is the

20   discounted present worth of all the dividends to be received on that share. The equation is:

21
$$P = \frac{C_1}{(1 + K_1)} + \frac{C_2}{(1 + K_2)^2} + \cdots + \frac{C_n}{(1 + K_n)^n}$$

---

[18] Direct Testimony of Harold Walker, page 10, lines 1-2 and page 11, lines 1-12.

1   where: P = current value or price

2   C_1 = cash flow in period 1, etc.

3   K_1 = discount rate in period 1, etc.

4   n = infinity

5   This relationship can be simplified if dividends are assumed to grow at a constant rate of

6   g. As a result, the equation above can be reduced to:

7
$$P = \frac{D}{(K - g)}$$

8   which, when solved for K results in:

9
$$K = \frac{D}{P} + g$$

10   where: P = current price

11   D = current dividend rate

12   K = discount rate (cost of capital)

13   g = constant rate of expected growth

14   This formula essentially recognizes that the return expected or required by investors

15   is comprised of two factors: the dividend yield (current income) and expected growth in

16   dividends (future income).

17   **Q.   PLEASE EXPLAIN HOW YOU EMPLOY THE DCF MODEL.**

18   **A.**   I use the constant growth DCF model. In doing so, I combine the current dividend

19   yield for each of the proxy utility stocks described in the previous section with several

20   indicators of expected dividend growth.

21   **Q.   HOW DID YOU DERIVE THE DIVIDEND YIELD COMPONENT OF THE DCF**

22   **EQUATION?**

1   **A.** Several methods can be used to calculate the dividend yield component. These

2   methods generally differ in the manner in which the dividend rate is employed (*i.e.*, current

3   versus future dividends or annual versus quarterly compounding variant). I use a version

4   of the quarterly compounding variant, which is expressed as follows:

5
$$Yield = \frac{D_0(1 + 0.5g)}{P_0}$$

6   This dividend yield component recognizes the timing of dividend payments and

7   dividend increases.

8   The P_0 in my yield calculation is the average of the high and low stock price for

9   each proxy company for the three-month period (November 2019 – January 2020). The

10   D_0 is the current annualized dividend rate for each proxy company. The time period I used

11   for average stock prices precedes the financial market response to the COVID-19 situation.

12   It also matches the end of the period used by PUI witness Walker in his ROE analyses.[19]

13   **Q. HOW DO YOU ESTIMATE THE DIVIDEND GROWTH COMPONENT OF THE**

14   **DCF EQUATION?**

15   **A.** The DCF model's dividend growth rate component is usually the most crucial and

16   controversial element of this methodology. The objective of estimating the dividend

17   growth component is to reflect the growth expected by investors that is embodied in the

18   price (and yield) of a company's stock. As such, it is important to recognize that individual

19   investors have different expectations and consider alternative indicators in deriving their

20   expectations. This is evidenced by the fact that every investment decision resulting in the

21   purchase of a particular stock is matched by another investment decision to sell that stock.

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[19] Direct Testimony of Harold Walker, III, page 28, lines 9-13.

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1   A wide array of indicators exists for estimating investors' growth expectations. As

2   a result, it is evident that investors do not always use a single indicator of growth. It

3   therefore is necessary to consider alternative dividend growth indicators in deriving the

4   growth component of the DCF model. I have considered five indicators of growth in my

5   DCF analyses. These are:

6   1)   Years 2014-2018 (five-year average) earnings retention, or

7   fundamental growth (per Value Line);

8   2)   Five-year average of historic growth in earnings per share (EPS),

9   dividends per share (DPS), and book value per share (BVPS) (per

10   Value Line);

11   3)   Years 2019, 2020 and 2022-2024 projections of earnings retention

12   growth (per Value Line);

13   4)   Years 2016-2018 to 2022-2024 projections of EPS, DPS, and BVPS

14   (per Value Line); and

15   5)   Five-year projections of EPS growth (per First Call).

16   I believe this combination of growth indicators is a representative and appropriate

17   set with which to begin the process of estimating investor expectations of dividend growth

18   for the groups of proxy companies. I also believe that these growth indicators reflect the

19   types of information that investors consider in making their investment decisions. As I

20   indicated previously, investors have an array of information available to them, all of which

21   would be expected to have some impact on their decision-making process.

22   **Q.   PLEASE DESCRIBE YOUR DCF CALCULATIONS.**

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1   **A.**   Schedule 6 of Exhibit DCP-2 presents my DCF analysis.   Page 1 shows the

2   calculation of the "raw" (*i.e.*, prior to adjustment for growth) dividend yield for each proxy

3   company. Pages 2 and 3 show the growth rates for the groups of proxy companies. Page

4   4 shows the DCF calculations, which are presented on several bases: mean, median, low,

5   and high values. These results can be summarized as follows:

	Mean	Median	Mean Low[20]	Mean High[21]	Median Low[22]	Median High[23]
Value Line Group	8.0%	7.4%	6.6%	9.1%	5.8%	8.8%
Parcell Group	7.2%	7.2%	5.8%	8.1%	5.6%	8.5%

6   I note that the individual DCF calculations shown on Schedule 6 should not be

7   interpreted to reflect the expected cost of capital for individual companies in the proxy

8   groups; rather, the individual values shown should be interpreted as alternative information

9   considered by investors.

10 **Q.   WHAT DO YOU CONCLUDE FROM YOUR DCF ANALYSES?**

11 **A.**   The DCF rates resulting from the analysis of the proxy groups fall into a wide range

12   between 5.6 percent and 9.1 percent. The highest DCF rates are in a range from 8.1 percent

13   to 9.1 percent.

14   I believe a range of 8.1 percent to 9.1 percent represents the current DCF-derived

15   ROE for the proxy groups. This range includes the highest DCF rate and exceeds the low,

16   mean, and median DCF rates. I recommend a DCF ROE of 9.1 percent for PUI, which

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[20] Using the lowest mean growth rate.
[21] Using only the highest mean growth rate.
[22] Using the lowest median growth rate.
[23] Using the highest median growth rate.

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1   focuses on the highest DCF rates (*i.e.*, range of 8.1 percent to 9.1 percent) and exceeds the

2   low, mean, and median DCF rates.

3   I observe that the constant growth DCF model currently produces cost of equity

4   results that are lower than has been the case in recent years. This is, in part, a reflection of

5   the decline in capital costs (*e.g.*, in terms of interest rates). I believe that the constant-

6   growth DCF model remains relevant and informative. It is also my personal experience

7   that this model is used the most by cost of capital witnesses of all the available ROE

8   models. Nevertheless, I have focused only on the highest of the DCF results in making my

9   recommendations. As such, I have not considered the lower calculated DCF results. In

10   addition, I note that the 9.1 percent upper end of the DCF results includes the impact of the

11   water utilities (*i.e.*, Aqua America and SJW) that have been involved in significant merger

12   activities. As a result, my DCF conclusions are favorable to PUI.

13   **VIII.   CAPITAL ASSET PRICING MODEL ANALYSIS**

14   **Q.   PLEASE DESCRIBE THE THEORY AND METHODOLOGICAL BASIS OF THE**

15   **CAPM.**

16   **A.**   The CAPM describes the relationship between a security's investment risk and its

17   market rate of return. This relationship identifies the rate of return which investors expect

18   a security to earn so that its market return is comparable with the market returns earned by

19   other securities that have similar risk.

20   The relationship is specified by the Security Market Line (SML). As indicated in

21   the figure below, the SML indicates the relationship between each security's or portfolio's

22   "beta" and its resulting expected return. The SML sets forth the "betas" and corresponding

1   expected returns of all securities and portfolios of securities that are available in the capital

2   market at a given moment in time.

Figure 6.1
Security Market Line

Expected Return

SML

Risk (beta)
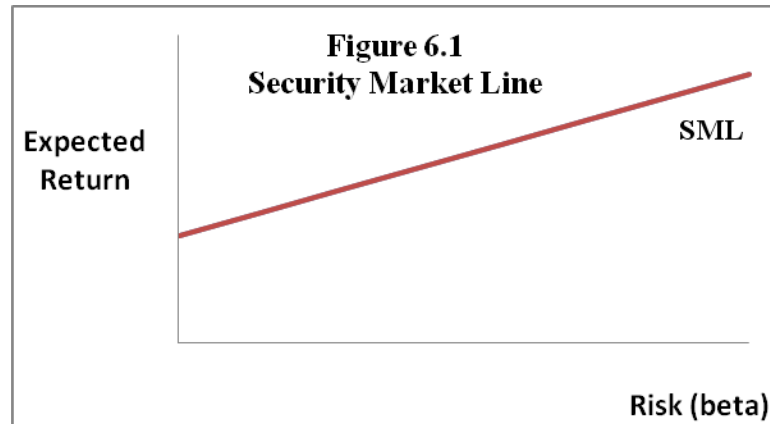
3   Beta is an indicator of investment risk. It is a measure of the expected amount of

4   change in a security's price that results from a change in the overall market's security

5   prices. As such, beta indicates the security's variability of return relative to the return

6   variability of the overall capital market.

7   Variability of market returns is a measure of risk and is caused by two general

8   factors. First, changes in economic, social, and political conditions affect the risk structure

9   and market prices of all securities. Changes in these factors consequently cause the market

10   return to vary. This is referred to as market risk or systematic risk. Second, each company

11   and industry have unique business and financial attributes, which also cause returns and

12   prices to vary. This is known as firm-specific risk or unsystematic (or non-systematic)

13   risk.

14   Investors can, through diversification of their security holdings, substantially

15   reduce or eliminate the return variation caused by the second general factor (*i.e.*, the unique

16   business and financial attributes). However, the return variance or risk caused by the first

1   factor (changes in economic, social, and political conditions) cannot be eliminated because

2   changes in these factors impact all securities to some degree.

3   Consequently, in a diversified portfolio of securities, it is the risk associated with

4   the first factor that commands the return premium to attract investor capital. Beta, a

5   measure of a security's return variability relative to the return variability of the market as

6   a whole, is an indicator of the risk associated with the first factor. The SML specifies the

7   relationship between the non-diversifiable or systematic risk and the return premium

8   required to be comparable with other securities of similar risk. This relationship is known

9   as CAPM.

10 **Q.   HOW IS THE CAPM DERIVED?**

11 **A.**   The general form of the CAPM is:

12

$$K = R_f + \beta(R_m - R_f)$$

13   where: K = cost of equity

14   R_f = risk free rate

15   R_m = return on market

16   β = beta

17   R_m-R_f = market risk premium

18   The CAPM is a variant of the risk premium ("RP") method. I believe the CAPM

19   is generally superior to the simple RP method because the CAPM specifically recognizes

20   the risk of a particular company or industry (*i.e.*, beta), whereas the simple RP method

21   assumes the same cost of equity for all companies exhibiting similar bond ratings or other

22   characteristics.

23 **Q.   WHAT DO YOU USE FOR THE RISK-FREE RATE?**

1   **A.**   The first input of the CAPM is the risk-free rate (R_f). The risk-free rate reflects the

2   level of return that can be achieved without accepting any risk.

3   In CAPM applications, the risk-free rate is generally recognized by use of U.S.

4   Treasury securities. Two general types of U.S. Treasury securities are often utilized as the

5   R_f component -- short-term U.S. Treasury bills and long-term U.S. Treasury bonds.

6   I have performed CAPM calculations using the three-month average yield

7   (November 2019 – January 2020) for 20-year U.S. Treasury bonds. I use the yields on

8   long-term Treasury bonds since this matches the long-term perspective of ROE analyses.

9   Over this three-month period, these bonds had an average yield of 2.12 percent.

10 **Q.**   **WHAT IS BETA AND WHAT BETAS DO YOU EMPLOY IN YOUR CAPM?**

11 **A.**   Beta is a measure of the relative volatility (and thus risk) of a particular stock in

12   relation to the overall market. Betas less than 1.0 are considered less risky than the market,

13   whereas betas greater than 1.0 are riskier. Utility stocks traditionally have had betas below

14   1.0. I utilize the most recent Value Line betas for each company in the proxy groups.

15 **Q.**   **HOW DO YOU ESTIMATE THE MARKET RISK PREMIUM COMPONENT?**

16 **A.**   The market risk premium component (R_m-R_f) represents the investor-expected

17   premium of common stocks over the risk-free rate, or long-term government bonds. For

18   the purpose of estimating the market risk premium, I considered alternative measures of

19   returns of the S&P 500 (a broad-based group of large U.S. companies) and 20-year U.S.

20   Treasury bonds (*i.e.*, the same timeframe as employed in the Duff & Phelps source[24] used

21   to develop risk premiums).

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[24] 2019 SBBI Yearbook, Stocks, Bonds, Bills and Inflation. U.S. Capital Markets Performance by Asset Class 1926-2018, Duff and Phelps.

1   First, I compared the actual annual returns on equity of the S&P 500 with the actual

2   annual yields of U.S. Treasury bonds. Schedule 7 of Exhibit DCP-2 shows the earned

3   returns on equity for the S&P 500 group for the period 1978-2018 (all available years

4   reported by S&P). This schedule also indicates the annual yields on 20-year U.S. Treasury

5   bonds and the annual differentials (*i.e.*, risk premiums) between the S&P 500 and U.S.

6   Treasury 20-year bonds. Based upon these returns, I conclude that the risk premium from

7   this analysis is 7.26 percent.

8   I next considered the total returns (*i.e.*, dividends/interest plus capital gains/losses)

9   for the S&P 500 group as well as for long-term[25] government bonds, as tabulated by Duff

10   & Phelps, using both arithmetic and geometric means. I considered the total returns for

11   the entire 1926-2018 period, which are as follows:

	S&P 500	L-T Gov't Bonds	Risk Premium
Arithmetic	11.9%	5.9%	6.0%
Geometric	10.0%	5.5%	4.5%

12

13   I conclude from this analysis that the expected risk premium is about 5.9 percent

14   (*i.e.*, the average of all three risk premiums: 7.26 percent from Schedule 7 and 6.0 percent

15   arithmetic and 4.5 percent geometric from Duff & Phelps). I believe that a combination of

16   arithmetic and geometric means is appropriate since investors have access to both types of

17   means[26] and, presumably, both types are reflected in investment decisions and thus, stock

18   prices and the cost of equity.

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[25] 20 Year.

[26] For example, Value Line uses compound (*i.e.*, geometric) growth rates in its projection. In addition, mutual funds report growth rates on a compound basis.

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1   **Q.   PLEASE DEFINE THE CONCEPTS OF ARITHMETIC MEAN AND**

2   **GEOMETRIC MEAN AND DESCRIBE WHY BOTH ARE RELEVANT TO**

3   **INVESTORS.**

4   **A.**   The arithmetic mean is the average of period (*e.g.*, annual) changes in a statistic,

5   such as investor returns. The geometric mean is a compound return of a period. The table

6   below describes each for a sample period:

Period	Value	Return
1	$10	
2	$11	10% ($1 return on $10 base)
3	$12	9% ($1 return on $11 base)
4	$11	-8% (-$1 loss on $12 base)
5	$12	9% ($1 return on $11 base)

7   In this example, the arithmetic return is the average of the annual "Return" figures,

8   which is 5 percent (*i.e.*, 10% +9% - 8% + 9% divided by 4). The arithmetic return thus

9   gives consideration to the return level for each period.

10   The geometric return is the <u>compound</u> return over the four-year period, in which

11   the value increased from $10 to $12, which is 20 percent over a four-year period, or 4.66

12   percent. The geometric mean thus is concerned with the total return over the period without

13   consideration of individual period averages.

14   Arithmetic returns are always higher than geometric returns since the individual

15   period returns in an arithmetic sense are not "compounded" which requires them to be

16   higher. Both types of returns are relevant to investors and both are reported to investors.

17   Investors are concerned with period returns, but over a given period of time it is the

18   geometric return that indicates their actual gain or loss. As a result, I consider both in my

19   analyses of the risk premium component.

1   **Q.   WHAT ARE YOUR CAPM RESULTS?**

2   **A.**   Schedule 8 of Exhibit DCP-2 shows my CAPM calculations. The results are:

	Mean	Median
Value Line Group	6.0%	6.0%
Parcell Group	6.1%	6.3%

3   **Q.   WHAT IS YOUR CONCLUSION CONCERNING THE CAPM COST OF**

4   **EQUITY?**

5   **A.**   The CAPM results collectively indicate a cost of equity of 6.0 percent to 6.3 percent

6   (6.15 percent mid-point) for the groups of proxy utilities. I conclude that an appropriate

7   CAPM cost of equity estimation for PUI is 6.3 percent, the upper end of this range.

8   **IX. COMPARABLE EARNINGS ANALYSIS**

9   **Q.   PLEASE DESCRIBE THE BASIS OF THE CE METHODOLOGY.**

10   **A.**   This method is based upon the economic concept of "opportunity cost." As noted

11   previously the cost of capital is an opportunity cost: the prospective return available to

12   investors from alternative investments of similar risk. If, in the opinion of those who save

13   and commit capital, the prospective return from a given investment is not equal to that

14   available from other investments of similar risk, the available capital will tend to be shifted

15   to the alternative investments. Through this mechanism, opportunity cost-driven pricing

16   signals direct capital to its most productive uses; thus, a free enterprise system promotes

17   an efficient allocation of scarce resources.

18   The established legal standards are consistent with the opportunity cost principle.

19   The two Supreme Court cases most frequently cited (*Bluefield* and *Hope*) hold that: the

20   return to the equity owners be sufficient to maintain the credit of the enterprise and

21   confidence in its financial integrity; to permit the enterprise to attract required additional

1   capital on reasonable terms; and, to provide the enterprise and its investors with an earnings

2   opportunity commensurate with the returns available on investments in other enterprises

3   having corresponding risks.

4   These three interrelated criteria constitute a succinct statement of the opportunity

5   cost principle. An expected return on equity equal to that which can be realized on

6   alternative investments of corresponding risk will, in turn, be sufficient to assure

7   confidence in the financial integrity of the enterprise, to maintain its credit, and to permit

8   it to attract new capital on reasonable terms.

9   The CE method is designed to measure the returns expected to be earned on the

10   original cost book value of similar risk enterprises. This method provides a direct measure

11   of the fair return, since it translates into practice the competitive principle upon which

12   regulation rests.

13   The CE method normally examines the experienced and/or projected return on book

14   common equity. The logic for examining returns on book equity follows from the use of

15   original cost rate base regulation for public utilities, which uses a utility's book common

16   equity to determine the cost of capital. This cost of capital is, in turn, used as the fair rate

17   of return which is then applied (multiplied) to the book value of rate base to establish the

18   dollar level of capital costs to be recovered by the utility. This technique is thus consistent

19   with the rate base, rate of return methodology used to set utility rates.

20   **Q.   HOW DO YOU APPLY THE CE METHODOLOGY IN YOUR ANALYSIS OF**

21   **PUI'S COST OF EQUITY?**

22   **A.**   I apply the CE methodology by examining realized returns on equity ("ROEs") for

23   the groups of proxy companies, as well as unregulated companies, and evaluating investor

1   acceptance of these returns by reference to the resulting market-to-book ratios ("M/Bs").

2   By use of this method, it is possible to assess the degree to which a given level of return

3   equates to the cost of capital. It is generally recognized for utilities that an M/B of greater

4   than one (*i.e.*, 100 percent) reflects a situation where a company is able to attract new equity

5   capital without dilution (*i.e.*, above book value). As a result, one objective of a fair ROE

6   is the maintenance of stock prices at or above book value. It is also apparent that a utility

7   M/B significantly above 1.0 protects existing shareholders from "dilution" that occurs

8   when new shares of equity are sold for a price less than book value.

9   I further note that my CE analysis is based upon market data (through the use of

10   M/Bs) and is thus essentially a market test. As a result, my CE analysis is not subject to

11   the criticisms occasionally made by some who maintain that past earned ROEs do not

12   necessarily represent the cost of capital. In addition, my CE analysis also uses prospective

13   returns and thus is not strictly backward looking.

14   **Q.   IS YOUR CE ANALYSIS BASED UPON AN ASSUMPTION THAT ROES ARE**

15   **THE ONLY FACTOR INFLUENCING STOCK PRICES AND M/BS?**

16   **A.**   No, it is not. I do not assume that earned ROEs are the sole determinant of M/Bs.

17   Rather, I demonstrate that M/Bs are important to public utilities and they correspondingly

18   reflect investors' assessment of the value of utility stocks relative to their respective book

19   value, which is the basis on which their rates are established by regulatory commissions.

20   **Q.   WHAT TIME PERIODS DID YOU EXAMINE IN YOUR CE ANALYSIS?**

21   **A.**   My CE analysis considers the experienced ROEs of the proxy groups of utilities for

22   the period 2002-2018 (*i.e.*, the last 17 years). The CE analysis requires that I examine a

23   relatively long period of time in order to determine trends in earnings over at least a full

1   business cycle. Further, in estimating a fair level of return for a future period, it is important

2   to examine earnings over a diverse period in order to avoid any undue influence from

3   unusual or abnormal conditions that may occur in a single year or shorter period.

4   Therefore, in forming my judgment of the current ROE, I focused on two periods:

5   2009-2018 (the current business cycle) and 2002-2008 (the most recent past business

6   cycle). I have also considered projected ROEs for 2019, 2020 and 2022-2024 (*i.e.*, the

7   time periods estimated by Value Line).

8 **Q.   PLEASE DESCRIBE YOUR CE ANALYSIS.**

9 **A.**   Schedule 9 and Schedule 10 of Exhibit DCP-2 contain summaries of experienced

10   ROEs and M/Bs for three groups of companies, while Schedule 11 presents a risk

11   comparison of utilities versus unregulated firms.

12   Schedule 9 shows the achieved ROEs and M/Bs for the groups of proxy utilities.

13   These can be summarized as follows:

14

	Value Line Group	Parcell Group
Historic ROE		
Mean	9.4-9.7%	9.3-9.7%
Median	9.2-9.3%	9.1-9.5%
Historic M/B		
Mean	221-232%	225-227%
Median	209-223%	212-221%
Prospective ROE		
Mean	9.6-12.4%	11.3-13.3%
Median	10.5-12.5%	11.0-14.0%

15   These results indicate that historic ROEs of 9.1 percent to 9.7 percent have been

16   adequate to produce M/Bs of 209 percent to 232 percent for the groups of utilities.

1   Furthermore, projected ROEs for 2019, 2020, and 2022-2024 are within a range of 9.6

2   percent to 14.0 percent for the utility groups. These relate to 2018 M/Bs of 300 percent or

3   greater.

4 **Q.   DO YOU ALSO REVIEW THE EARNINGS OF UNREGULATED FIRMS?**

5 **A.**   Yes. As an alternative, I also examine the S&P 500 group. This is a well-

6   recognized group of firms that is widely utilized in the investment community and is

7   indicative of the competitive sector of the economy. Schedule 10 of Exhibit DCP-2

8   presents the earned ROEs and M/Bs for the S&P 500 group over the past 17 years (*i.e.*,

9   2002-2018). As this schedule indicates, over the two business cycle periods, this group's

10   average ROEs ranged from 12.4 percent to 13.6 percent, with average M/Bs ranging

11   between 249 percent and 275 percent.

12 **Q.   HOW CAN THE ABOVE INFORMATION BE USED TO ESTIMATE PUI'S ROE?**

13 **A.**   The recent and prospective ROEs of the proxy utilities and S&P 500 groups can be

14   viewed as an indication of the level of return realized and expected in the regulated and

15   competitive sectors of the economy. In order to apply these returns to the cost of equity

16   for the proxy utilities, however, it is necessary to compare the risk levels of the water

17   utilities and the competitive companies. I do this in Schedule 11 of Exhibit DCP-2, which

18   compares several risk indicators for the S&P 500 group and the water utility groups. The

19   information in this schedule indicates that the S&P 500 group is riskier than the water

20   utility proxy groups.

21 **Q.   WHAT ROE IS INDICATED BY YOUR CE ANALYSIS?**

22 **A.**   Based on recent and prospective ROEs and M/Bs, my CE analysis indicates that

23   the required ROE for the proxy utilities is no more than 9.0 percent to 10.0 percent (9.5

1   percent mid-point). Recent ROEs of 9.1 percent to 9.7 percent have resulted in M/Bs more

2   than 200 percent. Prospective ROEs of 9.6 percent to 14.0 percent have been accompanied

3   by M/Bs over 300 percent. As a result, it is apparent that authorized returns below this

4   level would continue to result in M/Bs of well above 200 percent. As I indicated earlier,

5   the fact that M/Bs substantially exceed 100 percent indicates that historic and prospective

6   ROEs of 9.5 percent reflect earning levels that are well above the actual earned ROE for

7   those regulated companies. I also note that a company whose stock sells above book value

8   can attract capital in a way that enhances the book value of existing stockholders, thus

9   creating a favorable environment for financial integrity. My specific CE recommendation

10   is the upper of this range, or 10.0 percent.

X. RETURN ON EQUITY RECOMMENDATION

12   **Q.   PLEASE SUMMARIZE THE RESULTS OF YOUR THREE COST OF EQUITY**

13   **ANALYSES.**

14   **A.**   My three cost of equity analyses produced the following:

	Recommendation
DCF	9.1%
CAPM	6.3%
CE	10.0%

15   These results indicate an overall broad range of 6.3 percent to 10.0 percent. I

16   recommend a ROE range of 9.1 percent to 10.0 percent for PUI. This range includes my

17   DCF result (9.1 percent), and my CE result (10.0 percent). Specifically, I recommend a

18   cost of equity of 9.55 percent for PUI, the mid-point of this range.

19   **Q.   IT APPEARS THAT YOUR CAPM RESULTS ARE LESS THAN YOUR DCF AND**

20   **CE RESULTS.   DO YOU DIRECTLY CONSIDER THE CAPM RESULTS IN**

21   **DETERMINING THE COST OF EQUITY FOR PUI?**

1   **A.**   Not at this time. I have conducted CAPM studies in my cost of equity analyses for

2   many years. It is apparent that the CAPM results are currently significantly less than the

3   DCF and CE results. There are two reasons for the lower CAPM results. First, risk

4   premiums are lower currently than was the case in prior years. This is the result of lower

5   equity returns that have been experienced beginning with the Great Recession and

6   continuing over the past several years. This is also reflective of a decline in investor

7   expectations of equity returns and risk premiums. Second, the level of interest rates on

8   U.S. Treasury bonds (*i.e.*, the risk-free rate) has been lower in recent years, as well as the

9   current time. This is partially the result of the actions of the Federal Reserve to stimulate

10   the economy. This also impacts investor expectations of returns in a negative fashion.

11   I note that, initially, investors may have believed that the decline in U.S. Treasury

12   yields was a temporary factor that would soon be replaced by a rise in interest rates.

13   However, this has not been the case as interest rates have remained low and continued to

14   decline for most of the past seven-plus years. As a result, it cannot be maintained that low

15   interest rates (and low CAPM results) are temporary and do not reflect investor

16   expectations. Consequently, the CAPM results should be considered as one factor in

17   determining the cost of equity for PUI. Even though I do not factor the CAPM results

18   directly into my cost of equity recommendation, I do believe these lower results are

19   indicative of the recent and continuing decline in utility costs of capital, including cost of

20   equity.

21   **XI. TOTAL COST OF CAPITAL**

22   **Q.**   **WHAT IS THE TOTAL COST OF CAPITAL FOR PUI?**

1   **A.**   Schedule 1 of Exhibit DCP-2 reflects the costs of capital for PUI using my proposed

2   capital structure, embedded cost of debt, as well as my cost of equity recommendations.

3   The resulting total cost of capital is a range of 7.66 percent to 8.15 percent for PUI. I

4   recommend a cost of capital of 7.90 percent for PUI, which incorporates a cost of equity

5   of 9.55 percent.

6   **XII.   COMMENTS ON PUI'S COST OF CAPITAL REQUESTS**

7   **Q.**   **WHAT COST OF EQUITY HAS PUI REQUESTED IN ITS APPLICATION?**

8   **A.**   The Company's filing requests a cost of equity of 10.50 percent. The 10.50 percent

9   requested ROE is developed in the testimony of PUI witness Harold Walker.

10 **Q.**   **WHAT IS THE BASIS FOR MR. WALKER'S COST OF EQUITY RANGE?**

11 **A.**   PUI's return on equity request is developed in the testimony of witness Walker as

12 follows.[27]

Discounted Cash Flow Model	10.10%
Capital Asset Pricing Model	9.80%
Risk Premium Model	10.40%
Investment Risk Adjustment	0.40%
Recommended Common Equity Cost Rate Range	10.20-10.80%
Recommended Common Equity Cost Rate	10.50%

13 **Q.**   **BEFORE COMMENTING ON MR. WALKER'S SPECIFIC METHODOLOGIES**

14 **AND RECOMMENDATIONS, DO YOU HAVE ANY GENERAL COMMENTS**

15 **AND RESPONSES TO HIS CONCLUSIONS?**

16 **A.**   Yes, I do. It is apparent that Mr. Walker's conclusions and recommendations are

17 well beyond the mainstream of authorized ROE's for water/wastewater utilities throughout

18 the U.S. in recent years.

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[27] Direct Testimony of Harold Walker, III, page 43, lines 14-18 and Exhibit HW-2, Schedule 19.

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1 **Q.** **DO YOU HAVE ANY DISAGREEMENTS WITH ANY OR ALL OF MR.**

2 **WALKER'S METHODOLOGIES AND RECOMMENDATIONS?**

3 **A.** Yes. I have disagreements with each of his cost of equity methodologies and

4 conclusions, as well as his proposed business risk (size) adjustment included in his

5 recommendations.

6 **Q.** **BEGINNING WITH HIS DCF MODEL AND CONCLUSIONS, PLEASE**

7 **SUMMARIZE YOUR UNDERSTANDING OF MR. WALKER'S DCF ANALYSIS.**

8 **A.** Mr. Walker performs DCF analyses for his group of seven water/wastewater

9 utilities. His results are as follows:[28]

	Water Group
Yield	1.8%
Growth	7.4%
Market Value DCF	9.2%
Hamada Adjustment	0.9%
DCF Result	10.1%

10 **Q.** **WHICH COMPONENT OF MR. WALKER'S DCF ANALYSES DO YOU**

11 **DISAGREE WITH?**

12 **A.** I disagree with two of the components of Mr. Walker's DCF analyses. These are

13 his proposed 7.4 percent growth rate and his 0.90 percent "leverage" (*i.e.*, Hamada

14 adjustment).

15 **Q.** **WHAT COMMENTS DO YOU HAVE CONCERNING MR. WALKER'S**

16 **GROWTH RATE RECOMMENDATION?**

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[28] Direct Testimony of Harold Walker, III, page 35, lines 31-32 and page 36, lines 1-6, Exhibit HW-2, Schedule 12.

Direct Testimony of David C. Parcell   Docket No. 2019-281-S   Palmetto Utilities, Inc.

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1   **A.**   Mr. Walker recommends a 7.4 percent growth rate for his water/wastewater group.

2   This conclusion substantially exceeds investor expectations and is not even supported by

3   Mr. Walker's analyses. As is indicated on Mr. Walker's Schedule 13, most of the historic

4   and projected growth rates of EPS, DPS, and cash flow per share (CFPS) are dominated by

5   one company (SJW Corp), which was recently involved in a major merger with another

6   utility (Connecticut Water) and consequently does not meet Mr. Walker's own proxy group

7   selection criteria.[29] Of the four historic growth rates he examined, only two are as high as

8   7.4 percent when SJW is excluded. In addition, of the eight projected growth rates he

9   considered only three are as high as 7.4 percent (excluding SJW). Mr. Walker's

10   recommendation for 7.4 percent growth rate can thus only be derived by relying on a proxy

11   group member that does not meet his own selection criteria, as well as ignoring the majority

12   of the growth rates he considers.

13   **Q.**   **DO YOU HAVE ANY COMMENTS CONCERNING MR. WALKER'S**

14   **PROPOSED LEVERAGE ADJUSTMENT?**

15   **A.**   Yes. Mr. Walker is proposing a "leverage adjustment," which is essentially an

16   adjustment to the DCF cost rate to offset his concern that the divergence of stock prices

17   from book values creates a conflict when the results of a market-derived cost of equity are

18   applied to the common equity ratio measured at book value. Mr. Walker further claims

19   that the existence of utility stock prices above book value creates greater financial risk for

20   a book value capital structure versus a market value capital structure since the book value

21   capital structure has a lower common equity ratio than the market value capital structure.

22   As a result, Mr. Walker claims that because the rate setting process utilizes the book value

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[29] Direct Testimony of Harold Walker, III, page 10, lines 1-2.

1 capitalization, when computing the weighted average cost of capital, it is necessary to

2 adjust the market-determined return on equity for the higher financial risk related to the

3 book value of the capitalization.[30] Mr. Walker employs a formula (*i.e.*, Hamada formula)

4 to quantify the differential between the book value and market value capital structure and

5 concludes a 0.90 percent upward adjustment to the DCF cost ROE is warranted.[31]

6 I strongly disagree with Mr. Walker's proposed adjustment. Investors understand

7 that wastewater utility rates are established based upon the book value of company assets

8 (rate base) and capitalization. As a result, investors are not expecting a regulatory award

9 on any other basis, nor should they be compensated for any difference between the book

10 value and market value of their common equity.

11 **Q. HOW ARE MR. WALKER'S CAPM ANALYSES PERFORMED?**

12 **A.** Mr. Walker proposes two sets of CAPM analyses, as shown below:[32]

13 $$R_f + \beta(R_m-R_f) + size = K$$

14 Historic: $2.4\% + 0.66 \times 6.9\% + 0.80 = 7.8\%$

15 Projected: $2.4\% + 0.66 \times 9.1\% + 0.80\% = 9.2\%$

16 **Q. DO YOU AGREE WITH MR. WALKER'S 2.4 PERCENT RISK-FREE RATE?**

17 **A.** No, I do not. Current yields on long-term U.S. Treasury bonds are well below 2.4

18 percent, and in fact are below 2.0 percent. In addition, Mr. Walker improperly uses

19 projected interest rates, rather than current, actual interest rates, as one of the risk-free rates.

20 **Q. DO YOU AGREE WITH MR. WALKER'S VALUES FOR THE MARKET RISK**

21 **PREMIUM COMPONENT OF HIS CAPM ANALYSES?**

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[30] Direct Testimony of Harold Walker, III, pages 34-36.
[31] Direct Testimony of Harold Walker, III, page 36, lines 4-6.
[32] Direct Testimony of Harold Walker, III, Exhibit HW-2, Schedule 17.

1 **A.**   No, I do not. Mr. Walker proposes a 6.9 percent historic risk premium and a 9.1

2 percent projected risk premium. Both are well below the historic (i.e., 1928-2018) actual

3 risk premiums measured by the above-cited Duff & Phelps studies.   He provides no

4 justification as to why investors would expect the risk premium of stocks over bonds to

5 income for 6.9 percent on a historic basis to 9.1 percent on a projected basis.

6 **Q.   YOU INDICATE THAT MR. WALKER'S CAPM ANALYSES USE**

7 **FORECASTED YIELDS ON U.S. TREASURY BONDS.   WHY DO YOU**

8 **DISAGREE WITH THIS?**

9 **A.**   It is proper to use the current yield, rather than a projected yield, as the risk-free

10 rate in a risk premium and CAPM context. This is the case since the current yield is known

11 and measurable and reflects investors' collective assessment of all relevant capital market

12 conditions. Prospective interest rates, in contrast, are not measurable and not achievable.

13 For example, if the current yield on long-term Treasury bonds is 2.0 percent, this reflects

14 the rate that investors can actually receive on their investment. Investors cannot receive a

15 prospective yield on their investments since such a yield is not actual but rather speculative.

16 I further note that Mr. Walker used actual bond yields, not projected yields, to derive his

17 respective risk premiums. He is thus inconsistent in combining these risk premiums with

18 projected bond yields.

19 **Q.   DO YOU AGREE WITH THE PROPOSITION THAT PUI SHOULD BE**

20 **ENTITLED TO A SIZE OR CREDIT RISK ADJUSTMENT?**

21 **A.**   No, I do not. PUI's ratepayers should not be charged sewer rates that reflect an

22 incremental return to reflect the size of the Company. Such an increment is not justified

1   and not appropriate, especially because PUI is a subsidiary of a larger company, and PUI

2   does not raise equity capital on its own but does so instead through the consolidated entity.

3   **Q.   IS IT PROPER TO COMPARE THE SIZE OF PUI TO THE PROXY**

4   **WATER/WASTEWATER COMPANIES AND MAKE RISK COMPARISONS**

5   **BASED UPON THE SIZE DIFFERENTIALS BETWEEN THEM?**

6   **A.**   No, it is not proper. Many of the proxy water utilities have multiple subsidiaries

7   that operate in different jurisdictions. Following Mr. Walker's reasoning, each of the

8   subsidiaries of the proxy utilities should be considered as riskier than the proxy group since,

9   by definition, they would have to be smaller. This reasoning is flawed, since these

10 individual water/wastewater company subsidiaries do not raise their equity capital directly

11 from investors, but rather do so as a consolidated entity.

12 **Q.   ARE THERE OTHER REASONS WHY A SIZE ADJUSTMENT IS IMPROPER?**

13 **A.**   Yes. There are other compelling reasons why a small size adjustment is not proper

14 for regulated utilities. Proposals for size adjustments are frequently based upon reference

15 to the Duff & Phelps (formerly Morningstar/Ibbotson) studies. However, the small size

16 adjustment in the Duff & Phelps studies is based on the analysis of all stocks, the majority

17 of which are unregulated and include industries that are much riskier than utilities. While

18 it may or may not be true that, on an overall market basis, smaller publicly-traded firms

19 exhibit more risk than larger firms, these smaller companies' stocks tend to be engaged in

20 riskier businesses as a whole than do larger businesses. Such is not the case for regulated

21 utilities.

22   Indeed, an academic study conducted by Professor Annie Wong found that:

23   [U]tility and industrial stocks do not share the same characteristics.
24   First, given firm size, utility stocks are consistently less risky than

1   industrial stocks. Second, industrial betas tend to decrease with firm

2   size but utility betas do not. These findings may be attributed to the

3   fact that all public utilities operate in an environment with regional

4   monopolistic power and regulated financial structure. As a result,

5   the business and financial risk are very similar among the utilities

6   regardless of their sizes.   Therefore, utility betas would not

7   necessarily be expected to be related to firm size.

8   . . .

9   This implies that although the price phenomenon has been strongly

10   documented for the industrials, the **findings suggest that there is**

11   **no need to adjust for the firm size in utility rate regulation.**[33]

12   **[Emphasis Added.]**

13 **Q. CAN YOU PROVIDE ANY DIRECT COMPARISONS OF**

14 **WATER/WASTEWATER UTILITIES THAT DEMONSTRATE THAT SMALLER**

15 **UTILITIES ARE NOT MORE RISKY THAN LARGER ONES?**

16 **A.**   Yes. Implicit in Mr. Walker's proposal is an assumption that any perceived small

17 size risk adjustment for unregulated companies applies to regulated public utilities.

18 Schedule 12 of Exhibit DCP-2 demonstrates objectively that this is not the case. As this

19 Schedule shows, there is no significant difference and no discernible pattern of increase

20 among the risk indicators of publicly-traded water/wastewater utilities of different sizes.

21   In addition, Schedule 13 demonstrates that this is not the case for the broader group

22 of electric utilities. As this schedule shows, there is no significant difference among the

23 risk indicators of publicly-traded electric utilities of different sizes.[34] The table below

24 summarizes the information contained in this schedule:

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[33] Wong, Annie, "Utility Stocks and the Size Effect: An Empirical Analysis," Journal of the Midwest Finance Association, 1993, pages. 95-101.
[34] I utilize electric utilities for comparison purposes since there is more publicly-traded electric utilities than water utilities.

1

Cap Size	Safety	Beta	Financial Strength	S&P Rank	S&P Rating	Moody's Rating
Under $5 B	2.0	.63	B++/A	B+/A-	BBB+	Baa1
$5 - $15 B	2.0	.67	A	A	BBB+	Baa1
$15 - $25 B	2.1	.58	B++	B++	BBB+	Baa2/Baa1
$25 B Plus	1.5	.56	A	A	BBB+/A-	Baa1

2   The safety rank beta values, financial strength, and S&P bond ratings are about the

3 same for all sizes of electric utilities. These risk indicators do not reflect any risk

4 differential as the size of the electric utilities decrease from large to small. To the contrary,

5 this data indicates that regulated monopoly utility providers have approximately the same

6 risk regardless of size. As a result, the logic Mr. Walker uses to justify his proposed small

7 size adjustment is not justified.

8 **Q.   PLEASE NOW TURN TO MR. WALKER'S RISK PREMIUM METHODOLOGY**

9   **AND CONCLUSIONS. WHAT IS YOUR UNDERSTANDING OF HIS USE OF**

10   **THIS METHODOLOGY?**

11 **A.**   Mr. Walker's risk premium methodology can be summarized as follows:[35]

Projected yield on A-rated debt	3.6%
Risk Premium	5.9%
	9.5%
Hamada Adjustment	0.9%
	10.4%

12   As was the case for his risk-free rate in the CAPM, Mr. Walker improperly uses

13 projected yields on debt, rather than the more appropriate use of actual yields.

14 **Q.   DO YOU HAVE ANY FURTHER COMMENTS ON MR. WALKER'S RISK**

15   **PREMIUM METHODOLOGY?**

---

[35] Direct Testimony of Harold Walker, III, page 43, lines 4-10.

1   **A.**   Yes, I do. Mr. Walker's risk premium methodology, like his DCF methodology,

2   employs the Hamada Adjustment, which I have indicated to be improper.

3   **Q.**   **WILL YOU UPDATE YOUR TESTIMONY BASED ON INFORMATION THAT**

4   **BECOMES AVAILABLE?**

5   **A.**   Yes. ORS fully reserves the right to revise its recommendations via supplemental

6   testimony should new information not previously provided by the Company, or other

7   sources, becomes available.

8   **Q.**   **DOES THIS CONCLUDE YOUR PRE-FILED DIRECT TESTIMONY?**

9   **A.**   Yes, it does.

BACKGROUND AND EXPERIENCE PROFILE
DAVID C. PARCELL, MBA, CRRA
PRINCIPAL/SENIOR ECONOMIST

EDUCATION

1985	M.B.A., Virginia Commonwealth University
1970	M.A., Economics, Virginia Polytechnic Institute and State University, (Virginia Tech)
1969	B.A., Economics, Virginia Polytechnic Institute and State University, (Virginia Tech)

POSITIONS

Present	Principal, Technical Associates, Inc.
2007-2016	President, Technical Associates, Inc.
1995-2007	Executive Vice President and Senior Economist, Technical Associates, Inc.
1993-1995	Vice President and Senior Economist, C. W. Amos of Virginia
1972-1993	Vice President and Senior Economist, Technical Associates, Inc.
1969-1972	Research Economist, Technical Associates, Inc.
1968-1969	Research Associate, Department of Economics, Virginia Polytechnic Institute and State University

ACADEMIC HONORS

Omicron Delta Epsilon - Honor Society in Economics
Beta Gamma Sigma - National Scholastic Honor Society of Business Administration
Alpha Iota Delta - National Decision Sciences Honorary Society
Phi Kappa Phi - Scholastic Honor Society

PROFESSIONAL DESIGNATIONS

Certified Rate of Return Analyst - Founding Member

RELEVANT EXPERIENCE

Financial Economics -- Advised and assisted many Virginia banks and savings and loan associations on organizational and regulatory matters. Testified approximately 25 times before the Virginia State Corporation Commission and the Regional Administrator of National Banks on matters related to branching and organization for banks, savings and loan associations, and consumer finance companies. Advised financial institutions on interest rate structure and loan maturity. Testified before Virginia State Corporation Commission on maximum rates for consumer finance companies.

Testified before several committees and subcommittees of Virginia General Assembly on numerous banking matters.

Clients have included First National Bank of Rocky Mount, Patrick Henry National Bank, Peoples Bank of Danville, Blue Ridge Bank, Bank of Essex, and Signet Bank.

Published articles in law reviews and other periodicals on structure and regulation of banking/financial services industry.

<u>Utility Economics</u> -- Performed numerous financial studies of regulated public utilities. Testified in over 575 cases before some fifty state and federal regulatory agencies.

Prepared numerous rate of return studies incorporating cost of equity determination based on DCF, CAPM, comparable earnings and other models. Developed procedures for identifying differential risk characteristics by nuclear construction and other factors.

Conducted studies with respect to cost of service and indexing for determining utility rates, the development of annual review procedures for regulatory control of utilities, fuel and power plant cost recovery adjustment clauses, power supply agreements among affiliates, utility franchise fees, and use of short-term debt in capital structure.

Presented expert testimony before federal regulatory agencies Federal Energy Regulatory Commission, Federal Power Commission, and National Energy Board (Canada), state regulatory agencies in Alabama, Alaska, Arizona, Arkansas, California, Connecticut, Delaware, District of Columbia, Florida, Georgia, Hawaii, Illinois, Indiana, Kansas, Kentucky, Maine, Maryland, Mississippi, Missouri, Nebraska, Nevada, New Hampshire, New Jersey, New Mexico, North Carolina, Ohio, Oklahoma, Ontario (Canada), Pennsylvania, South Carolina, Texas, Utah, Vermont, Virginia, West Virginia, Washington, Wisconsin, U.S. Virgin Islands, and Yukon Territory (Canada).

Published articles in law reviews and other periodicals on the theory and purpose of regulation and other regulatory subjects.

Clients served include state regulatory agencies in Alaska, Arizona, Delaware, Georgia, Mississippi, Missouri, New Hampshire, North Carolina, Ontario (Canada), South Carolina, U.S. Virgin Islands, Virginia and Washington; consumer advocates and attorneys general in Alabama, Alaska, Arizona, District of Columbia, Florida, Georgia, Hawaii, Illinois, Indiana, Kansas, Kentucky, Maryland, Nevada, New Jersey, New Mexico, Ohio, Oklahoma, Pennsylvania, South Carolina, Texas, Utah, Vermont, Virginia, and West Virginia; federal agencies including Defense Communications Agency, the Department of Energy, Department of the Navy, and General Services Administration; and various organizations such as Bath Iron Works, Illinois Citizens' Utility Board, Illinois Governor's Office of Consumer Services, Illinois Small Business Utility Advocate, Wisconsin's Environmental Decade, Wisconsin's Citizens Utility Board, Old Dominion Electric Cooperative, and industrial customers.

Insurance Economics -- Conducted analyses of the relationship between the investment income earned by insurance companies on their portfolios and the premiums charged for insurance. Analyzed impact of diversification on financial strength of Blue Cross/Blue Shield Plans in Virginia.

Conducted studies of profitability and cost of capital for property/casualty insurance industry. Evaluated risk of and required return on surplus for various lines of insurance business.

Presented expert testimony before Virginia State Corporation Commission concerning cost of capital and expected gains from investment portfolio. Testified before insurance bureaus of Maine, Massachusetts, New Jersey, North Carolina, Rhode Island, South Carolina and Vermont concerning cost of equity for insurance companies.

Prepared cost of capital and investment income return analyses for numerous insurance companies concerning several lines of insurance business. Analyses used by Virginia Bureau of Insurance for purposes of setting rates.

Special Studies -- Conducted analyses which evaluated the financial and economic implications of legislative and administrative changes. Subject matter of analyses include returnable bottles, retail beer sales, wine sales regulations, taxi-cab taxation, and bank regulation. Testified before several Virginia General Assembly subcommittees.

Testified before Virginia ABC Commission concerning economic impact of mixed beverage license.
Clients include Virginia Beer Wholesalers, Wine Institute, Virginia Retail Merchants Association, and Virginia Taxicab Association.

Franchise, Merger & Anti-Trust Economics -- Conducted studies on competitive impact on market structures due to joint ventures, mergers, franchising and other business restructuring. Analyzed the costs and benefits to parties involved in mergers. Testified in federal courts and before banking and other regulatory bodies concerning the structure and performance of markets, as well as on the impact of restrictive practices.

Clients served include Dominion Bankshares, asphalt contractors, and law firms.

Transportation Economics -- Conducted cost of capital studies to assess profitability of oil pipelines, trucks, taxicabs and railroads. Analyses have been presented before the Federal Energy Regulatory Commission and Alaska Pipeline Commission in rate proceedings. Served as a consultant to the Rail Services Planning Office on the reorganization of rail services in the U.S.

Economic Loss Analyses -- Testified in federal courts, state courts, and other adjudicative forums regarding the economic loss sustained through personal and business injury whether due to bodily harm, discrimination, non-performance, or anticompetitive practices. Testified on economic loss to a commercial bank resulting from publication of adverse information concerning solvency.

Testimony has been presented on behalf of private individuals and business firms.

MEMBERSHIPS

American Economic Association
Virginia Association of Economists
Richmond Society of Financial Analysts
Financial Analysts Federation
Society of Utility and Regulatory Financial Analysts
 Board of Directors 1992-2000
 Secretary/Treasurer 1994-1998
 President   1998-2000

RESEARCH ACTIVITY

Books and Major Research Reports

"Stock Price As An Indicator of Performance," Master of Arts Thesis, Virginia Tech, 1970

"Revision of the Property and Casualty Insurance Ratemaking Process Under Prior Approval in the Commonwealth of Virginia," prepared for the Bureau of Insurance of the Virginia State Corporation Commission, with Charles Schotta and Michael J. Ileo, 1971

"An analysis of the Virginia Consumer Finance Industry to Determine the Need for Restructuring the Rate and Size Ceilings on Small Loans in Virginia and the Process by which They are Governed," prepared for the Virginia Consumer Finance Association, with Michael J. Ileo, 1973

State Banks and the State Corporation Commission: A Historical Review, Technical Associates, Inc., 1974

"A Study of the Implications of the Sale of Wine by the Virginia Department of Alcoholic Beverage Control", prepared for the Virginia Wine Wholesalers Association, Virginia Retail Merchants Association, Virginia Food Dealers Association, Virginia Association of Chain Drugstores, Southland Corporation, and the Wine Institute, 1983.

"Performance and Diversification of the Blue Cross/Blue Shield Plans in Virginia: An Operational Review", prepared for the Bureau of Insurance of the Virginia State Corporation Commission, with Michael J. Ileo and Alexander F. Skirpan, 1988.

The Cost of Capital - A Practitioners' Guide, Society of Utility and Regulatory Financial Analysts, 2010 (previous editions in 1991, 1992, 1993, 1994, 1995 and 1997).

Papers Presented and Articles Published

"The Differential Effect of Bank Structure on the Transmission of Open Market Operations," Western Economic Association Meeting, with Charles Schotta, 1971

"The Economic Objectives of Regulation: The Trend in Virginia," (with Michael J. Ileo), William and Mary Law Review, Vol. 14, No. 2, 1973

"Evolution of the Virginia Banking Structure, 1962-1974: The Effects of the Buck-Holland Bill", (with Michael J. Ileo), William and Mary Law Review, Vol. 16, No. 3, 1975

"Banking Structure and Statewide Branching: The Potential for Virginia", William and Mary Law Review, Vol. 18, No. 1, 1976

"Bank Expansion and Electronic Banking: Virginia Banking Structure Changes Past, Present, and Future," William and Mary Business Review," Vol. 1, No. 2, 1976

"Electronic Banking - Wave of the Future?" (with James R. Marchand), Journal of Management and Business Consulting, Vol. 1, No. 1, 1976

"The Pricing of Electricity" (with James R. Marchand), Journal of Management and Business Consulting, Vol. 1, No. 2, 1976

"The Public Interest - Bank and Savings and Loan Expansion in Virginia" (with Richard D. Rogers), University of Richmond Law Review, Vol. 11, No. 3, 1977

"When Is It In the 'Public Interest' to Authorize a New Bank?", University of Richmond Law Review, Vol. 13, No. 3, 1979

"Banking Deregulation and Its Implications on the Virginia Banking Structure," William and Mary Business Review, Vol. 5, No. 1, 1983

"The Impact of Reciprocal Interstate Banking Statutes on The Performance of Virginia Bank Stocks", with William B. Harrison, Virginia Social Science Journal, Vol. 23, 1988

"The Financial Performance of New Banks in Virginia", Virginia Social Science Journal, Vol. 24, 1989

"Identifying and Managing Community Bank Performance After Deregulation", with William B. Harrison, Journal of Managerial Issues, Vol. II, No. 2, Summer 1990

"The Flotation Cost Adjustment To Utility Cost of Common Equity - Theory, Measurement and Implementation," presented at Twenty-Fifth Financial Forum, National Society of Rate of Return Analysts, Philadelphia, Pennsylvania, April 28, 1993.

Biography of Myon Edison Bristow, <u>Dictionary of Virginia Biography</u>, Volume 2, 2001.

PALMETTO UTILITIES, INC.
TOTAL COST OF CAPITAL

Capital Item	Percent 1/		Cost Rate			Weighted Cost		
Long-Term Debt	45.00%		5.89%	2/			2.65%	
Common Equity	55.00%	9.10%	**9.55%**	10.00%	5.01%	5.25%	5.50%	
Total Capital	100.00%				7.66%		8.15%	
						7.90%		
						(with 9.55% ROE)		

1/ Capital structure recommended by Mr. Parcell.

2/ Cost of debt contained in PUI's Application.

ECONOMIC INDICATORS

Period	Real GDP * Growth	Industrial Production Growth	Unemploy- ment Rate	Consumer Price Index
1975 - 1982 Cycle				
1975	-0.2%	-8.9%	8.5%	7.0%
1976	5.4%	7.9%	7.7%	4.8%
1977	4.6%	7.6%	7.1%	6.8%
1978	5.6%	5.5%	6.1%	9.0%
1979	3.2%	3.0%	5.8%	13.3%
1980	-0.2%	-2.6%	7.1%	12.4%
1981	2.6%	1.3%	7.6%	8.9%
1982	-1.9%	-5.2%	9.7%	3.8%
1983 - 1991 Cycle				
1983	4.6%	2.7%	9.6%	3.8%
1984	7.3%	8.9%	7.5%	3.9%
1985	4.2%	1.2%	7.2%	3.8%
1986	3.5%	1.0%	7.0%	1.1%
1987	3.5%	5.2%	6.2%	4.4%
1988	4.2%	5.2%	5.5%	4.4%
1989	3.7%	0.9%	5.3%	4.6%
1990	1.9%	1.0%	5.6%	6.1%
1991	-0.1%	-1.5%	6.8%	3.1%
1992 - 2001 Cycle				
1992	3.6%	2.9%	7.5%	2.9%
1993	2.7%	3.3%	6.9%	2.7%
1994	4.0%	5.2%	6.1%	2.7%
1995	2.7%	4.7%	5.6%	2.5%
1996	3.8%	4.5%	5.4%	3.3%
1997	4.5%	7.2%	4.9%	1.7%
1998	4.5%	5.8%	4.5%	1.6%
1999	4.7%	4.4%	4.2%	2.7%
2000	4.1%	3.9%	4.0%	3.4%
2001	1.0%	-3.1%	4.7%	1.6%
2002 - 2009				
2002	1.8%	0.3%	5.8%	2.4%
2003	2.8%	1.2%	6.0%	1.9%
2004	3.8%	2.6%	5.5%	3.3%
2005	3.3%	3.3%	5.1%	3.4%
2006	2.7%	2.2%	4.6%	2.5%
2007	1.8%	2.5%	4.6%	4.1%
2008	-0.1%	-3.5%	5.8%	0.1%
2009	-2.5%	-11.5%	9.3%	2.7%
Current Cycle				
2010	2.6%	5.5%	9.6%	1.5%
2011	1.6%	3.1%	8.9%	3.0%
2012	2.2%	3.0%	8.1%	1.7%
2013	1.8%	2.0%	7.4%	1.5%
2014	2.5%	3.1%	6.2%	0.8%
2015	2.9%	-1.0%	5.3%	0.7%
2016	1.6%	-2.0%	4.9%	2.1%
2017	2.4%	2.3%	4.4%	2.1%
2018	2.9%	3.9%	3.9%	1.9%
2019	2.3%	0.8%	3.7%	2.3%
2020				
1Q	-4.8%	-2.1%	3.8%	-0.1%

* GDP = Gross Domestic Product.

Note that certain series of data are periodically revised.

Sources: Council of Economic Advisors, Economic Indicators, various issues, certain earlier year data from sources used by this publication.

INTEREST RATES

Period	Prime Rate	U.S. Treasury T Bills 3 Months	U.S. Treasury T Bonds 10 Year	Utility Bonds Aa	Utility Bonds A	Utility Bonds Baa
1975 - 1982 Cycle						
1975	7.86%	5.84%	7.99%	9.44%	10.09%	10.96%
1976	6.84%	4.99%	7.61%	8.92%	9.29%	9.82%
1977	6.83%	5.27%	7.42%	8.43%	8.61%	9.06%
1978	9.06%	7.22%	8.41%	9.10%	9.29%	9.62%
1979	12.67%	10.04%	9.44%	10.22%	10.49%	10.96%
1980	15.27%	11.51%	11.46%	13.00%	13.34%	13.95%
1981	18.89%	14.03%	13.93%	15.30%	15.95%	16.60%
1982	14.86%	10.69%	13.00%	14.79%	15.86%	16.45%
1983 - 1991 Cycle						
1983	10.79%	8.63%	11.10%	12.83%	13.66%	14.20%
1984	12.04%	9.58%	12.44%	13.66%	14.03%	14.53%
1985	9.93%	7.48%	10.62%	12.06%	12.47%	12.96%
1986	8.33%	5.98%	7.68%	9.30%	9.58%	10.00%
1987	8.21%	5.82%	8.39%	9.77%	10.10%	10.53%
1988	9.32%	6.69%	8.85%	10.26%	10.49%	11.00%
1989	10.87%	8.12%	8.49%	9.56%	9.77%	9.97%
1990	10.01%	7.51%	8.55%	9.65%	9.86%	10.06%
1991	8.46%	5.42%	7.86%	9.09%	9.36%	9.55%
1992 - 2001 Cycle						
1992	6.25%	3.45%	7.01%	8.55%	8.69%	8.86%
1993	6.00%	3.02%	5.87%	7.44%	7.59%	7.91%
1994	7.15%	4.29%	7.09%	8.21%	8.31%	8.63%
1995	8.83%	5.51%	6.57%	7.77%	7.89%	8.29%
1996	8.27%	5.02%	6.44%	7.57%	7.75%	8.16%
1997	8.44%	5.07%	6.35%	7.54%	7.60%	7.95%
1998	8.35%	4.81%	5.26%	6.91%	7.04%	7.26%
1999	8.00%	4.66%	5.65%	7.51%	7.62%	7.88%
2000	9.23%	5.85%	6.03%	8.06%	8.24%	8.36%
2001	6.91%	3.44%	5.02%	7.59%	7.78%	8.02%
2002 - 2009						
2002	4.67%	1.62%	4.61%	7.19%	7.37%	8.02%
2003	4.12%	1.02%	4.01%	6.40%	6.58%	6.84%
2004	4.34%	1.38%	4.27%	6.04%	6.16%	6.40%
2005	6.19%	3.16%	4.29%	5.44%	5.65%	5.93%
2006	7.96%	4.73%	4.80%	5.84%	6.07%	6.32%
2007	8.05%	4.41%	4.63%	5.94%	6.07%	6.33%
2008	5.09%	1.48%	3.66%	6.18%	6.53%	7.25%
2009	3.25%	0.16%	3.26%	5.75%	6.04%	7.06%
Current Cycle						
2010	3.25%	0.14%	3.22%	5.24%	5.46%	5.96%
2011	3.25%	0.06%	2.78%	4.78%	5.04%	5.57%
2012	3.25%	0.09%	1.80%	3.83%	4.13%	4.86%
2013	3.25%	0.06%	2.35%	4.24%	4.47%	4.98%
2014	3.25%	0.03%	2.54%	4.19%	4.28%	4.80%
2015	3.26%	0.06%	2.14%	4.00%	4.12%	5.03%
2016	3.51%	0.33%	1.84%	3.73%	3.93%	4.69%
2017	4.10%	0.94%	2.33%	3.82%	4.00%	4.38%
2018	4.91%	1.94%	2.91%	4.09%	4.25%	4.67%
2019	5.58%	2.08%	2.14%	3.61%	3.77%	4.19%
Jan	5.50%	2.41%	2.71%	4.18%	4.35%	4.91%
Feb	5.50%	2.40%	2.68%	4.05%	4.25%	4.76%
Mar	5.50%	2.41%	2.57%	3.98%	4.16%	4.65%
Apr	5.50%	2.38%	2.53%	3.91%	4.08%	4.55%
May	5.50%	2.35%	2.40%	3.84%	3.98%	4.47%
June	5.50%	2.20%	2.07%	3.65%	3.82%	4.31%
July	5.50%	2.13%	2.06%	3.53%	3.69%	4.13%
Aug	5.25%	1.97%	1.63%	3.17%	3.29%	3.63%
Sep	5.00%	1.93%	1.70%	3.24%	3.37%	3.71%
Oct	4.75%	1.68%	1.71%	3.24%	3.39%	3.72%
Nov	4.75%	1.55%	1.81%	3.25%	3.43%	3.76%
Dec	4.75%	1.54%	1.86%	3.22%	3.40%	3.73%
2020						
Jan	4.75%	1.53%	1.76%	3.12%	3.29%	3.60%
Feb	4.75%	1.54%	1.50%	2.96%	3.11%	3.42%
Mar	3.25%	0.46%	0.87%	3.30%	3.50%	3.96%
Apr	3.25%	0.15%	0.66%	2.93%	3.19%	3.82%

Sources: Council of Economic Advisors, <u>Economic Indicators</u>, various issues, Mergent Bond Record.

STOCK PRICE INDICATORS

Period	S&P Composite	NASDAQ Composite	Dow Jones Industrials	S&P E/P
1975 - 1982 Cycle				
1975			802.49	9.15%
1976			974.92	8.90%
1977			894.63	10.79%
1978			820.23	12.03%
1979			844.40	13.46%
1980			891.41	12.86%
1981			932.92	11.96%
1982			844.36	11.60%
1983 - 1991 Cycle				
1983			1,190.34	8.03%
1984			1,178.48	10.02%
1985			1,328.23	8.12%
1986			1,792.76	6.09%
1987			2,275.99	5.48%
1988	265.79		2,060.82	8.01%
1989	322.84		2,508.91	7.42%
1990	334.59		2,678.94	6.47%
1991	376.18	491.69	2,929.33	4.79%
1992 - 2001 Cycle				
1992	415.74	599.26	3,284.29	4.22%
1993	451.41	715.16	3,522.06	4.46%
1994	460.33	751.65	3,793.77	5.83%
1995	541.64	925.19	4,493.76	6.09%
1996	670.83	1,164.96	5,742.89	5.24%
1997	872.72	1,469.49	7,441.15	4.57%
1998	1,085.50	1,794.91	8,625.52	3.46%
1999	1,327.33	2,728.15	10,464.88	3.17%
2000	1,427.22	2,783.67	10,734.90	3.63%
2001	1,194.18	2,035.00	10,189.13	2.95%
2002 - 2009				
2002	993.94	1,539.73	9,226.43	2.92%
2003	965.23	1,647.17	8,993.59	3.84%
2004	1,130.65	1,986.53	10,317.39	4.89%
2005	1,207.23	2,099.32	10,547.67	5.36%
2006	1,310.46	2,263.41	11,408.67	5.78%
2007	1,476.66	2,577.12	13,169.98	5.29%
2008	1,220.89	2,162.46	11,252.61	3.54%
2009	946.73	1,841.03	8,876.15	1.86%
Current Cycle				
2010	1,139.31	2,347.70	10,662.80	6.04%
2011	1,268.89	2,680.42	11,966.36	6.77%
2012	1,379.56	2,965.77	12,967.08	6.20%
2013	1,462.51	3,537.69	14,999.67	5.57%
2014	1,930.67	4,374.31	16,773.99	5.25%
2015	2,061.20	4,943.49	17,590.61	4.59%
2016	2,092.39	4,982.49	17,908.08	4.17%
2017	2,448.22	6,231.28	21,741.91	4.22%
2018	2,744.68	7,419.27	25,045.75	4.66%
2019	2,912.50	7,936.50	26,378.41	4.53%
2020				
1Q	3,069.30	8,808.14	26,679.05	4.86%

Note: this source did not publish the S&P Composite prior to 1989 and the NASDAQ prior to 1991.

Sources: Council of Economic Advisors, _Economic Indicators_, various issues.

PALMETTO UTILITIES, INC.
CAPITAL STRUCTURE RATIOS
2014 - 2018 AND TEST YEAR

Year	Common Equity	Long-Term Debt	Short-Term Debt
2014	$25,737,226 42.2% 44.2%	$32,499,936 53.2% 55.8%	$2,822,592 4.6%
2015	$70,471,245 62.4% 63.7%	$40,095,788 35.5% 36.3%	$2,293,555 2.0%
2016	$74,734,192 58.9% 60.3%	$49,241,990 38.8% 39.7%	$2,877,006 2.3%
2017	$81,407,262 48.6% 49.5%	$83,031,248 49.5% 50.5%	$3,138,551 1.9%
2018	$81,199,363 49.5% 50.5%	$79,559,462 48.5% 49.5%	$3,138,551 1.9%
August 31, 2019	$97,776,703 57.8% 58.9%	$68,175,648 40.3% 41.1%	$3,138,551 1.9%

Sources: Response to ORS First Request of Books Records and Other Information, Question 1-24.

NI SOUTH CAROLINA UTILITIES
CAPITAL STRUCTURE RATIOS
2015 - 2019

Year	Common Equity	Long-Term Debt	Short-Term Debt 1/
2015	$41,422,538	$21,598,366	$1,185,731
	64.5%	33.6%	1.8%
	65.7%	34.3%	
2016	$43,786,027	$17,211,473	$10,451,060
	61.3%	24.1%	14.6%
	71.8%	28.2%	
2017	$49,246,252	$16,637,048	$28,393,622
	52.2%	17.6%	30.1%
	74.7%	25.3%	
2018	$81,128,135	$26,770,346	$56,166,771
	49.4%	16.3%	34.2%
	75.2%	24.8%	
2019	$99,358,598	$22,409,254	$47,416,771
	58.7%	13.2%	28.0%
	81.6%	18.4%	

1/ Current portion of long-term debt and advances from affiliates.

Source: Response to ORS Economics Request 2-1.

NI PACOLET MILLIKEN
CAPITAL STRUCTURE RATIOS
2015 - 2019

Year	Common Equity	Long-Term Debt	Short-Term Debt 1/
2015	$102,756,450	$55,388,776	$2,850,000
	63.8%	34.4%	1.8%
	65.0%	35.0%	
2016	$128,083,320	$43,495,495	$3,918,750
	73.0%	24.8%	2.2%
	74.6%	25.4%	
2017	$179,703,649	$41,989,741	$4,275,000
	79.5%	18.6%	1.9%
	81.1%	18.9%	
2018	$181,709,415	$36,047,369	$4,275,000
	81.8%	16.2%	1.9%
	83.4%	16.6%	
2019	$192,090,154	$30,115,391	$4,275,000
	84.8%	13.3%	1.9%
	86.4%	13.6%	

1/ Current portion of long-term debt and advances from affiliates.

Source: Response to ORS Economics Request 2-1.

PROXY COMPANIES
CAPITAL STRUCTURE RATIOS

	2014	2015	2016	2017	2018	2014-2018 Average	2022-2024 Estimated
Value Line Water Group							
American States Water Co.	60.9%	58.9%	60.6%	62.0%	59.5%	60.4%	54.0%
American Water Works Co.	47.4%	46.2%	47.5%	45.3%	43.6%	46.0%	41.0%
Aqua America, Inc.	51.5%	49.7%	51.6%	49.4%	45.6%	49.6%	47.0%
Artesian Resources	54.5%	56.1%	57.6%	58.1%	56.9%	56.6%	
California Water Service Group	59.9%	55.6%	55.4%	57.3%	50.7%	55.8%	60.5%
Middlesex Water Co.	58.8%	59.8%	61.5%	61.8%	61.6%	60.7%	60.5%
SJW Group	48.4%	50.2%	49.3%	51.8%	67.3%	53.4%	67.5%
York Water Co.	55.2%	55.6%	57.4%	57.0%	57.5%	56.5%	66.0%
Average						**54.9%**	**56.6%**
Median						**56.2%**	**60.5%**
Parcell Proxy Group							
American States Water Co.	60.9%	58.9%	60.6%	62.0%	59.5%	60.4%	54.0%
American Water Works Co.	47.4%	46.2%	47.5%	45.3%	43.6%	46.0%	41.0%
California Water Service Group	59.9%	55.6%	55.4%	57.3%	50.7%	55.8%	60.5%
Middlesex Water Co.	58.8%	59.8%	61.5%	61.8%	61.6%	60.7%	60.5%
York Water Co.	55.2%	55.6%	57.4%	57.0%	57.5%	56.5%	66.0%
Average						**55.9%**	**56.4%**
Median						**56.5%**	**60.5%**

Source: Value Line Investment Survey (January 10, 2020).

PROXY COMPANIES
CRITERIA FOR SELECTION

Company	Market Capitalization ($000)	Common Equity Ratio	Value Line Safety	S&P Bond Rating 6/	Moody's Bond Rating 6/	Proxy Group Inclusion?
Value Line Water Group 1/						
American States Water Co.	$3,200,000	56.0%	2	A+	NR	Yes
American Water Works Co.	$22,200,000	42.0%	3	A	Baa1	Yes
Aqua America, Inc.	$10,200,000	57.5%	2	A	Baa2	No 2/
Artesian Resources	$343,360	56.9%	3	NR	NR	No 3/
California Water Service Group	$2,500,000	49.0%	3	A+	NR	Yes
Consolidated Water Co.	$250,000	100.0%	3	NR	NR	No 5/
Middlesex Water Co.	$1,100,000	54.5%	2	A	NR	Yes
SJW Group	$2,000,000	63.5%	3	A-	NR	No 4/
York Water Co.	$600,000	60.0%	3	A-	NR	Yes
Parcell Proxy Group						
American States Water Co.	$3,200,000	56.0%	2	A+	NR	
American Water Works Co.	$22,200,000	42.0%	3	A	Baa1	
California Water Service Group	$2,500,000	49.0%	3	A+	NR	
Middlesex Water Co.	$1,100,000	54.5%	2	A	NR	
York Water Co.	$600,000	60.0%	3	A-	NR	

1/ Companies considered are reported in Value Line, Standard Edition, and are listed as "Water Utility Industry," except for Artesian Resources, which is reported in the Value Line, Small and Mid-Cap Edition.

2/ Aqua America not included in Parcell proxy group since this firm is currently involved in merger of Peoples Natural Gas Co., Peoples Gas, and Delta Natural Gas.

3/ Artesian Resources not included in Parcell proxy group since this company is not listed in Value Line Standard Edition, no Value Line projections.

4/ Connecticut Water and SJW not included in Parcell proxy group since these two firms merged on October 9, 2019, with SJW being the surviving company.

5/ Consolidated Water not included in Parcell proxy group since this Company operates primarily as a desalination provider of water in areas outside the U.S.

6/ Bond ratings are for Issuer Rating (Moody's) and Issuer Credit (Standard & Poor's) for companies that have these ratings, and highest other ratings for companies that do not have these ratings.

Sources: Value Line (January 10, 2020), S&P and Moody's websites, assessed January 6, 2020.

PROXY COMPANIES
DIVIDEND YIELD CALCULATIONS

Company	Quarterly DPS	Annual DPS	Stock Price (November 2019 - January 2020)			Yield
			High	Low	Average	
Value Line Water Group						
American States Water Co.	$0.305	$1.22	$96.00	$82.54	$89.27	1.37%
American Water Works Co.	$0.500	$2.00	$137.73	$114.96	$126.35	1.58%
Aqua America, Inc.	$0.750	$3.00	$68.38	$58.01	$63.20	4.75%
Artesian Resources	$0.250	$1.00	$39.60	$36.00	$37.80	2.65%
California Water Service Group	$0.198	$0.79	$56.49	$48.78	$52.64	1.50%
Middlesex Water Co.	$0.256	$1.02	$67.69	$58.75	$63.22	1.62%
SJW Group	$0.300	$1.20	$74.99	$66.39	$70.69	1.70%
York Water Co.	$0.180	$0.72	$49.85	$41.11	$45.48	1.58%
Mean						**2.09%**
Parcell Proxy Group						
American States Water Co.	$0.305	$1.22	$96.00	$82.54	$89.27	1.37%
American Water Works Co.	$0.500	$2.00	$137.73	$114.96	$126.35	1.58%
California Water Service Group	$0.198	$0.79	$56.49	$48.78	$52.64	1.50%
Middlesex Water Co.	$0.256	$1.02	$67.69	$58.75	$63.22	1.62%
York Water Co.	$0.180	$0.72	$49.85	$41.11	$45.48	1.58%
Mean						**1.53%**

Source: Information contained in Yahoo Finance.

PROXY COMPANIES
RETENTION GROWTH RATES

Company	2014	2015	2016	2017	2018	2014-18 Average	2019	2020	2016-18 to 2022-24	2019 - 2022-24 Average
Value Line Water Group										
American States Water Co.	5.7%	6.0%	5.3%	6.2%	4.5%	5.5%	6.0%	6.0%	5.5%	5.8%
American Water Works Co.	4.3%	4.7%	4.0%	2.5%	4.2%	3.9%	5.0%	5.0%	5.0%	5.0%
Aqua America, Inc.	6.1%	4.7%	5.6%	5.1%	2.1%	4.7%	4.0%	3.0%	4.0%	3.7%
Artesian Resources	1.6%	2.6%	3.4%	3.7%	3.6%	3.0%				
California Water Service Group	4.1%	2.0%	2.4%	4.7%	4.0%	3.4%	4.0%	5.5%	6.0%	5.2%
Middlesex Water Co.	3.1%	3.5%	4.3%	3.8%	7.0%	4.3%	6.0%	6.5%	7.5%	6.7%
SJW Group	10.2%	5.7%	8.6%	8.2%	1.8%	6.9%	1.0%	3.5%	5.5%	3.3%
York Water Co.	3.9%	4.4%	3.4%	4.0%	3.8%	3.9%	4.5%	4.0%	6.0%	4.8%
Mean						4.5%				4.9%
Parcell Proxy Group										
American States Water Co.	5.7%	6.0%	5.3%	6.2%	4.5%	5.5%	6.0%	6.0%	5.5%	5.8%
American Water Works Co.	4.3%	4.7%	4.0%	2.5%	4.2%	3.9%	5.0%	5.0%	5.0%	5.0%
California Water Service Group	4.1%	2.0%	2.4%	4.7%	4.0%	3.4%	4.0%	5.5%	6.0%	5.2%
Middlesex Water Co.	3.1%	3.5%	4.3%	3.8%	7.0%	4.3%	6.0%	6.5%	7.5%	6.7%
York Water Co.	3.9%	4.4%	3.4%	4.0%	3.8%	3.9%	4.5%	4.0%	6.0%	4.8%
Mean						4.2%				5.5%

Figures reported by Value Line as "Retained to Com Eq."

Source: Value Line Investment Survey (January 10, 2020).

PROXY COMPANIES
PER SHARE GROWTH RATES

Company	Five-Year Historic Growth Rates				Est'd '16-'18 to '22-'24 Growth Rates			
	EPS	DPS	BVPS	Average	EPS	DPS	BVPS	Average
Value Line Water Group								
American States Water Co.	4.5%	9.0%	4.0%	5.8%	8.0%	9.5%	5.0%	7.5%
American Water Works Co.	6.5%	10.5%	4.0%	7.0%	9.5%	9.0%	5.0%	7.8%
Aqua America, Inc.	5.5%	8.0%	6.5%	6.7%	8.0%	8.0%	9.0%	8.3%
Artesian Resources	9.0%	3.0%	3.5%	5.2%				
California Water Service Group	5.5%	3.0%	4.5%	4.3%	8.0%	6.5%	2.0%	5.5%
Middlesex Water Co.	11.0%	3.0%	4.5%	6.2%	7.5%	5.0%	3.0%	5.2%
SJW Group	18.5%	5.0%	8.0%	10.5%	7.0%	7.0%	7.5%	7.2%
York Water Co.	6.5%	4.0%	4.0%	4.8%	9.5%	6.5%	4.5%	6.8%
Mean				**6.3%**				**6.9%**
Parcell Proxy Group								
American States Water Co.	4.5%	9.0%	4.0%	5.8%	8.0%	9.5%	5.0%	7.5%
American Water Works Co.	6.5%	10.5%	4.0%	7.0%	9.5%	9.0%	5.0%	7.8%
California Water Service Group	5.5%	3.0%	4.5%	4.3%	8.0%	6.5%	2.0%	5.5%
Middlesex Water Co.	11.0%	3.0%	4.5%	6.2%	7.5%	5.0%	3.0%	5.2%
York Water Co.	6.5%	4.0%	4.0%	4.8%	9.5%	6.5%	4.5%	6.8%
Mean				**5.6%**				**6.6%**

Source: Value Line Investment Survey (January 10, 2020).

PROXY COMPANIES
DCF COST RATES

Company	Adjusted Yield	Historic Retention Growth	Prospective Retention Growth	Historic Per Share Growth	Prospective Per Share Growth	First Call EPS Growth	Average Growth	DCF Rates
Value Line Water Group								
American States Water Co.	1.4%	5.5%	5.8%	5.8%	7.5%	6.00%	6.1%	7.5%
American Water Works Co.	1.6%	3.9%	5.0%	7.0%	7.8%	8.20%	6.4%	8.0%
Aqua America, Inc.	4.9%	4.7%	3.7%	6.7%	8.3%	6.10%	5.9%	10.8%
Artesian Resources	2.7%	3.0%		5.2%		4.00%	4.0%	6.7%
California Water Service Group	1.5%	3.4%	5.2%	4.3%	5.5%	9.80%	5.6%	7.2%
Middlesex Water Co.	1.7%	4.3%	6.7%	6.2%	5.2%	2.70%	5.0%	6.7%
SJW Group	1.8%	6.9%	3.3%	10.5%	7.2%	14.00%	8.4%	10.1%
York Water Co.	1.6%	3.9%	4.8%	4.8%	6.8%	4.90%	5.1%	6.7%
Mean	2.2%	4.5%	4.9%	6.3%	6.9%	7.0%	5.8%	**8.0%**
Median	1.6%	4.1%	5.0%	6.0%	7.2%	6.1%	5.8%	**7.4%**
Composite - Mean		**6.6%**	7.1%	8.5%	**9.1%**	**9.1%**	8.0%	
Composite - Median		**5.8%**	6.6%	7.6%	**8.8%**	7.7%	7.4%	
Parcell Proxy Group								
American States Water Co.	1.4%	5.5%	5.8%	5.8%	7.5%	6.00%	6.1%	7.5%
American Water Works Co.	1.6%	3.9%	5.0%	7.0%	7.8%	8.20%	6.4%	8.0%
California Water Service Group	1.5%	3.4%	5.2%	4.3%	5.5%	9.80%	5.6%	7.2%
Middlesex Water Co.	1.7%	4.3%	6.7%	6.2%	5.2%	2.70%	5.0%	6.7%
York Water Co.	1.6%	3.9%	4.8%	4.8%	6.8%	4.90%	5.1%	6.7%
Mean	1.6%	4.2%	5.5%	5.6%	6.6%	6.3%	5.7%	**7.2%**
Median	1.6%	3.9%	5.2%	5.8%	6.8%	6.0%	5.6%	**7.2%**
Composite - Mean		**5.8%**	7.1%	7.2%	**8.1%**	7.9%	7.2%	
Composite - Median		**5.6%**	6.8%	7.5%	**8.5%**	7.6%	7.3%	

Sources: previous pages of this schedule, Yahoo! Finance.

STANDARD & POOR'S 500 COMPOSITE
20-YEAR U.S. TREASURY BOND YIELDS
RISK PREMIUMS

Year	EPS	BVPS	ROE	20-Year T-Bond Yield	Risk Premium
1977		$79.07			
1978	$12.33	$85.35	15.00%	7.90%	7.10%
1979	$14.86	$94.27	16.55%	8.86%	7.69%
1980	$14.82	$102.48	15.06%	9.97%	5.09%
1981	$15.36	$109.43	14.50%	11.55%	2.95%
1982	$12.64	$112.46	11.39%	13.50%	-2.11%
1983	$14.03	$116.93	12.23%	10.38%	1.85%
1984	$16.64	$122.47	13.90%	11.74%	2.16%
1985	$14.61	$125.20	11.80%	11.25%	0.55%
1986	$14.48	$126.82	11.49%	8.98%	2.51%
1987	$17.50	$134.07	13.42%	7.92%	5.50%
1988	$23.75	$141.32	17.25%	8.97%	8.28%
1989	$22.87	$147.26	15.85%	8.81%	7.04%
1990	$21.73	$153.01	14.47%	8.19%	6.28%
1991	$16.29	$158.85	10.45%	8.22%	2.23%
1992	$18.86	$149.74	12.22%	7.26%	4.96%
1993	$21.89	$180.88	13.24%	7.17%	6.07%
1994	$30.60	$193.06	16.37%	6.59%	9.78%
1995	$33.96	$216.51	16.58%	7.60%	8.98%
1996	$38.73	$237.08	17.08%	6.18%	10.90%
1997	$39.72	$249.52	16.33%	6.64%	9.69%
1998	$37.71	$266.40	14.62%	5.83%	8.79%
1999	$48.17	$290.68	17.29%	5.57%	11.72%
2000	$50.00	$325.80	16.22%	6.50%	9.72%
2001	$24.70	$338.37	7.44%	5.53%	1.91%
2002	$27.59	$321.72	8.36%	5.59%	2.77%
2003	$48.73	$367.17	14.15%	4.80%	9.35%
2004	$58.55	$414.75	14.98%	5.02%	9.96%
2005	$69.93	$453.06	16.12%	4.69%	11.43%
2006	$81.51	$504.39	17.03%	4.68%	12.35%
2007	$66.17	$529.59	12.80%	4.86%	7.94%
2008	$14.88	$451.37	3.03%	4.45%	-1.42%
2009	$50.97	$513.58	10.56%	3.47%	7.09%
2010	$77.35	$579.14	14.16%	4.25%	9.91%
2011	$86.95	$613.14	14.59%	3.82%	10.77%
2012	$86.51	$666.97	13.52%	2.46%	11.06%
2013	$100.20	$715.84	14.49%	2.88%	11.61%
2014	$102.31	$726.96	14.18%	3.41%	10.77%
2015	$88.43	$740.29	12.05%	2.47%	9.58%
2016	$95.48	$768.98	12.65%	2.30%	10.35%
2017	$110.98	$826.52	13.91%	2.67%	11.24%
2018	$134.66	$851.62	16.05%	2.82%	13.23%
Mean					**7.26%**

ROE = EPS divided by average of year-begin and year-end BVPS.

20-Year T-Bond Yield = income return on long-term U.S. Government Bonds.

Sources: Standard & Poor's, Duff & Phelps.

PROXY COMPANIES
CAPM COST RATES

Company	Risk-Free Rate	Beta	Risk Premium	CAPM Rates
Value Line Water Group				
American States Water Co.	2.12%	0.65	5.9%	6.0%
American Water Works Co.	2.12%	0.55	5.9%	5.4%
Aqua America, Inc.	2.12%	0.65	5.9%	6.0%
Artesian Resources	2.12%	0.65	5.9%	6.0%
California Water Service Group	2.12%	0.70	5.9%	6.3%
Middlesex Water Co.	2.12%	0.75	5.9%	6.5%
SJW Group	2.12%	0.60	5.9%	5.7%
York Water Co.	2.12%	0.70	5.9%	6.3%
Mean				**6.0%**
Median				**6.0%**
Parcell Proxy Group				
American States Water Co.	2.12%	0.65	5.9%	6.0%
American Water Works Co.	2.12%	0.55	5.9%	5.4%
California Water Service Group	2.12%	0.70	5.9%	6.3%
Middlesex Water Co.	2.12%	0.75	5.9%	6.5%
York Water Co.	2.12%	0.70	5.9%	6.3%
Mean				**6.1%**
Median				**6.3%**

Sources: Value Line Investment Survey (January 10, 2020), Standard & Poor's, Federal Reserve.

Yields on 20-Year U.S. Treasury Bonds

Month	Rate
Nov., 2019	2.13%
Dec. 2019	2.16%
Jan. 2020	2.07%
Average	2.12%

PROXY COMPANIES
RATES OF RETURN ON AVERAGE COMMON EQUITY

Company	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2002-08 Average	2009-18 Average	2019	2020	2022-24
Value Line Water Group																						
American States Water Co.	9.8%	5.6%	7.3%	8.6%	8.3%	9.5%	8.8%	8.7%	11.2%	10.7%	12.6%	13.2%	12.1%	12.4%	12.3%	13.4%	11.6%	8.3%	11.8%	13.5%	13.0%	14.0%
American Water Works Co.							4.1%	5.1%	6.6%	7.2%	8.6%	8.0%	8.9%	9.5%	9.1%	8.0%	10.1%		8.1%	10.5%	10.5%	11.5%
Aqua America, Inc.	12.6%	11.9%	11.4%	11.7%	10.6%	10.0%	9.6%	9.7%	10.8%	11.8%	11.5%	14.0%	13.4%	12.0%	13.1%	12.6%	9.7%	11.1%	11.9%	6.0%	8.5%	11.0%
Artesian Resources	9.2%	5.8%	7.3%	8.8%	7.9%	8.3%	7.3%	8.1%	8.1%	6.5%	8.5%	6.9%	7.7%	8.8%	9.5%	9.7%	9.5%	7.8%	8.3%			
California Water Service Group	9.7%	8.9%	9.7%	9.4%	7.9%	8.2%	10.0%	9.9%	8.8%	8.1%	9.3%	8.6%	9.3%	7.1%	7.4%	9.9%	9.2%	9.1%	8.8%	9.0%	11.0%	12.5%
Middlesex Water Co.	10.1%	8.1%	9.3%	8.7%	9.2%	8.9%	8.9%	7.1%	8.9%	7.5%	7.9%	8.8%	9.4%	9.8%	10.6%	10.1%	13.4%	9.0%	9.4%	12.5%	13.0%	14.5%
SJW Group	9.4%	10.4%	9.1%	10.8%	10.3%	8.2%	8.0%	5.9%	6.1%	7.9%	8.2%	7.3%	15.1%	10.1%	13.0%	13.2%	6.8%	9.5%	8.7%	4.5%	7.5%	9.5%
York Water Co.	10.4%	11.8%	11.3%	11.8%	10.9%	9.7%	9.4%	9.8%	10.1%	9.7%	9.5%	9.5%	11.0%	11.6%	10.6%	11.1%	10.9%	10.8%	10.4%	11.0%	10.5%	14.0%
Mean	10.2%	8.9%	9.3%	10.0%	9.3%	9.0%	8.3%	8.0%	8.8%	8.7%	9.5%	9.5%	10.3%	10.2%	10.7%	11.0%	10.2%	9.4%	9.7%	9.6%	10.6%	12.4%
Median	9.8%	8.9%	9.3%	9.4%	9.2%	8.9%	8.9%	8.4%	8.9%	8.0%	9.0%	8.7%	9.4%	10.0%	10.6%	10.6%	9.9%	9.2%	9.3%	10.5%	10.5%	12.5%
Parcell Proxy Group																						
American States Water Co.	9.8%	5.6%	7.3%	8.6%	8.3%	9.5%	8.8%	8.7%	11.2%	10.7%	12.6%	13.2%	12.1%	12.4%	12.3%	13.4%	11.6%	8.3%	11.8%	13.5%	13.0%	14.0%
American Water Works Co.							4.1%	5.1%	6.6%	7.2%	8.6%	8.0%	8.9%	9.5%	9.1%	8.0%	10.1%		8.1%	10.5%	10.5%	11.5%
California Water Service Group	9.7%	8.9%	9.7%	9.4%	7.9%	8.2%	10.0%	9.9%	8.8%	8.1%	9.3%	8.6%	9.3%	7.1%	7.4%	9.9%	9.2%	9.1%	8.8%	9.0%	11.0%	12.5%
Middlesex Water Co.	10.1%	8.1%	9.3%	8.7%	9.2%	8.9%	8.9%	7.1%	8.9%	7.5%	7.9%	8.8%	9.4%	9.8%	10.6%	10.1%	13.4%	9.0%	9.4%	12.5%	13.0%	14.5%
York Water Co.	10.4%	11.8%	11.3%	11.8%	10.9%	9.7%	9.4%	9.8%	10.1%	9.7%	9.5%	9.5%	11.0%	11.6%	10.6%	11.1%	10.9%	10.8%	10.4%	11.0%	10.5%	14.0%
Mean	10.0%	8.6%	9.4%	9.6%	9.1%	9.1%	8.2%	8.1%	9.1%	8.6%	9.6%	9.6%	10.1%	10.1%	10.0%	10.5%	11.0%	9.3%	9.7%	11.3%	11.6%	13.3%
Median	10.0%	8.5%	9.5%	9.1%	8.8%	9.2%	8.9%	8.7%	8.9%	8.1%	9.3%	8.8%	9.4%	9.8%	10.6%	10.1%	10.9%	9.1%	9.5%	11.0%	11.0%	14.0%

Source: Calculations made from data contained in Value Line Investment Survey (January 10, 2020).

Exhibit DCP-2
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PROXY COMPANIES
MARKET-TO-BOOK RATIOS

Company	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2002-08 Average	2009-18 Average
Value Line Water Group																			
American States Water Co.	181%	181%	164%	192%	229%	233%	194%	184%	179%	160%	183%	235%	253%	307%	321%	356%	404%	196%	258%
American Water Works Co.							74%	81%	97%	122%	144%	159%	180%	197%	251%	274%	278%	74%	178%
Aqua America, Inc.	289%	295%	291%	383%	376%	319%	226%	231%	237%	245%	253%	295%	283%	291%	316%	322%	321%	311%	279%
Artesian Resources	141%	158%	197%	214%	164%	178%	137%	131%	146%	138%	160%	167%	157%	171%	202%	233%	228%	170%	173%
California Water Service Group	182%	200%	213%	233%	232%	217%	196%	206%	178%	170%	164%	175%	182%	172%	218%	279%	285%	210%	203%
Middlesex Water Co.	233%	247%	246%	249%	208%	190%	159%	145%	158%	160%	163%	176%	178%	197%	266%	288%	323%	219%	205%
SJW Group					287%	279%	205%	176%	182%	171%	171%	178%	176%	173%	217%	266%	222%		193%
York Water Co.	282%	287%	287%	311%	340%	288%	188%	212%	218%	232%	233%	252%	267%	279%	366%	394%	334%	283%	279%
Mean	218%	228%	233%	264%	262%	243%	172%	171%	174%	175%	184%	205%	210%	223%	270%	302%	299%	232%	221%
Median	208%	224%	230%	241%	232%	233%	191%	180%	179%	165%	168%	177%	181%	197%	259%	284%	303%	223%	209%
Parcell Proxy Group																			
American States Water Co.	181%	181%	164%	192%	229%	233%	194%	184%	179%	160%	183%	235%	253%	307%	321%	356%	404%	196%	258%
American Water Works Co.							74%	81%	97%	122%	144%	159%	180%	197%	251%	274%	278%	74%	178%
California Water Service Group	182%	200%	213%	233%	232%	217%	196%	206%	178%	170%	164%	175%	182%	172%	218%	279%	285%	210%	203%
Middlesex Water Co.	233%	247%	246%	249%	208%	190%	159%	145%	158%	160%	163%	176%	178%	197%	266%	288%	323%	219%	205%
York Water Co.	282%	287%	287%	311%	340%	288%	188%	212%	218%	232%	233%	252%	267%	279%	366%	394%	334%	283%	279%
Mean	220%	229%	228%	246%	252%	232%	162%	166%	166%	169%	177%	199%	212%	230%	284%	318%	325%	227%	225%
Median	208%	224%	230%	241%	231%	225%	188%	184%	178%	160%	164%	176%	182%	197%	266%	288%	323%	221%	212%

Source: Calculations made from data contained in Value Line Investment Survey (January 10, 2020).

STANDARD AND POOR'S 500 COMPOSITE
RATES OF RETURN ON AVERAGE COMMON EQUITY
AND MARKET TO BOOK RATIOS

Year	Return on Average Equity	Market-To-Book Ratio
2002	8.4%	295%
2003	14.2%	278%
2004	15.0%	291%
2005	16.1%	278%
2006	17.0%	277%
2007	12.8%	284%
2008	3.0%	224%
2009	10.6%	187%
2010	14.2%	208%
2011	14.6%	207%
2012	13.5%	214%
2013	14.5%	237%
2014	14.2%	268%
2015	12.1%	273%
2016	12.7%	271%
2017	13.9%	310%
2018	16.1%	316%
Averages:		
2002-2008	**12.4%**	**275%**
2009-2018	**13.6%**	**249%**

Source: Standard & Poor's.

PROXY COMPANIES
RISK INDICATORS

Company	Value Line Safety Rank	Value Line Beta	Value Line Financial Strength	
Value Line Water Group				
American States Water Co.	2	0.65	A	4.00
American Water Works Co.	3	0.55	B+	3.33
Aqua America, Inc.	2	0.65	A	4.00
Artesian Resources	3	0.65	B	3.00
California Water Service Group	3	0.70	B++	3.67
Middlesex Water Co.	2	0.75	B++	3.67
SJW Group	3	0.60	B+	3.33
York Water Co.	3	0.70	B+	3.33
Mean	**2.6**	**0.66**	**B+/B++**	**3.54**
Parcell Proxy Group				
American States Water Co.	2	0.65	A	4.00
American Water Works Co.	3	0.55	B+	3.33
California Water Service Group	3	0.70	B++	3.67
Middlesex Water Co.	2	0.75	B++	3.67
York Water Co.	3	0.70	B+	3.33
Mean	**2.6**	**0.67**	**B++**	**3.60**

Source: Value Line Investment Survey (January 10, 2020).

PROXY COMPANIES AND STANDARD & POOR'S 500
RISK INDICATORS

Group	Value Line Safety Rank	Value Line Beta	Value Line Financial Strength
S&P 500	2.4	1.04	B++
Value Line Water Group	2.6	0.66	B+/B++
Parcell Proxy Group	2.6	0.67	B++

Source: Value Line Investment Survey (January 10, 2020).

Definitions:

Safety rankings are in a range of 1 to 5, with 1 representing the highest safety or lowest risk.

Beta reflects the variability of a particular stock, relative to the market as a whole. A stock with a beta of 1.0 moves in concert with the market; a stock with a beta below 1.0 is less variable than the market; and a stock with a beta above 1.0 is more variable than the market.

Financial strengths range from C to A++, with the latter representing the highest level.

Common stock rankings range from D to A+, with the latter representing the highest level.

WATER UTILITIES
RISK MEASURES COMPARED TO SIZE

Company	Market Capitalization ($000)	Value Line Beta	Value Line Safety	S&P Bond Rating
Value Line Water Utility Group				
York Water Co.	$600,000	0.70	3	A-
Middlesex Water Co.	$1,100,000	0.75	2	A
SJW Group	$2,000,000	0.60	3	A-
California Water Service Group	$2,500,000	0.70	3	A+
American States Water Co.	$3,200,000	0.65	2	A+
Aqua America, Inc.	$10,200,000	0.65	2	A
American Water Works Co.	$22,200,000	0.55	3	A

Sources: Value Line (January 10, 2020), S&P.

PUBLIC UTILITY RISK INDICATORS
RANKED BY SIZE

COMPANY	2019 CAP ($000) Value Line	SAFETY	BETA	FIN STR	S&P BOND RATING AUS	MOODY'S BOND RATING AUS
Otter Tail Corp	$2,000,000	2	0.65	A	BBB	Baa2
El Paso Electric Co.	$2,700,000	2	0.70	B++	BBB	Baa1
MGE Energy Inc.	$2,700,000	1	0.55	A+	AA-	A1
Avista Corp.	$3,000,000	2	0.60	A	BBB	Baa2
NorthWestern	$3,700,000	2	0.60	B++	BBB	Baa2
PNM Resources	$3,900,000	3	0.60	B+	BBB+	Baa3
ALLETE	$4,500,000	2	0.65	A	BBB+	Baa1
Black Hills Corp.	$4,800,000	2	0.75	A	BBB+	Baa2
Hawaiian Electric Industries, Inc.	$4,800,000	2	0.55	A	BBB-	Baa2
Portland General	$4,900,000	2	0.60	B++	BBB+	A3
$5 Billion or Less		2.0	0.63	A/B++	BBB+	Baa1
IDACORP	$5,300,000	2	0.60	A	BBB	Baa1
OGE Energy Corp.	$8,700,000	2	0.80	A	BBB+	Baa1
Pinnacle West Capital Corp.	$10,000,000	1	0.55	A+	A-	A3
Alliant Energy	$12,700,000	2	0.60	A	A-	Baa1
CenterPoint Energy, Inc.	$14,000,000	3	0.80	B+	BBB+	Baa2
Evergy, Inc.	$15,000,000	2	nmf	B++	A-	Baa2
$5 Billion to $15 Billion		2.0	0.67	A	BBB+	Baa1
AVANGRID, Inc.	$16,000,000	2	0.40	B++	BBB+	Baa1
CMS Energy Corp.	$18,000,000	2	0.55	B++	BBB+	Baa1
Ameren Corp.	$19,000,000	2	0.55	A	BBB+	Baa1
PPL Corp	$21,000,000	2	0.65	B++	A-	Baa2
Edison International	$23,000,000	3	0.60	B+	BBB	Baa3
Entergy Corp.	$23,000,000	3	0.60	B++	BBB+	Baa2
FirstEnergy Corp.	$23,000,000	2	0.60	B++	BBB	Baa3
DTE Energy Company	$24,000,000	2	0.55	B++	BBB+	Baa1
Eversource Energy	$25,000,000	1	0.60	A	A-	Baa1
Fortis	$25,000,000	2	0.65	B++	A-	Baa3
$15 Billion to $25 Billion		2.1	0.58	B++	BBB+	Baa1/Baa2
Consolidated Edison, Inc.	$29,000,000	1	0.45	A+	A-	Baa1
Public Service Enterprise Group, Inc.	$29,000,000	1	0.65	A++	BBB+	Baa1
WEC Energy Group	$31,000,000	1	0.50	A+	A-	Baa1
Xcel Energy Inc.	$31,000,000	1	0.50	A+	A-	Baa1
Sempra Energy	$38,000,000	2	0.75	A	BBB+	Baa1
Exelon Corp.	$44,000,000	2	0.70	B++	BBB+	Baa2
American Electric Power Company	$46,000,000	1	0.55	A+	A-	Baa1
Dominion Energy	$60,000,000	2	0.55	B++	BBB+	Baa2
Southern Company	$60,000,000	2	0.50	A	A-	Baa2
Duke Energy Corp.	$65,000,000	2	0.50	A	A-	Baa1
NextEra Energy, Inc.	$101,000,000	1	0.55	A+	A-	Baa1
Over $25 Billion		1.5	0.56	A	A-/BBB+	Baa1

Sources:

Value Line Investment Survey
East -- August 16, 2019
Central -- September 13, 2019
West -- July 26, 2019

Moody's website - accessed August 19, 2019

S&P website - accessed August 19, 2019